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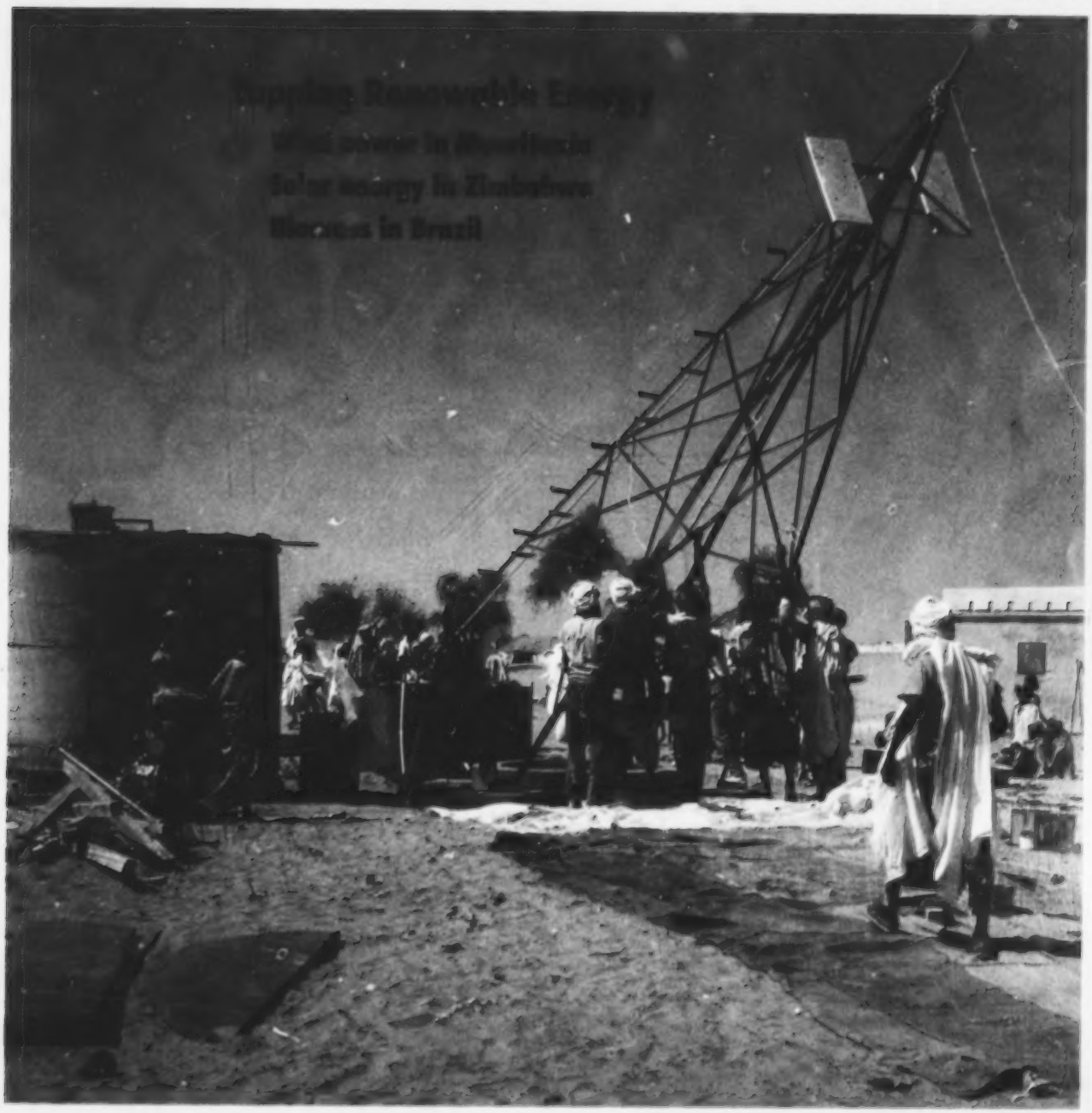
CHOICES

THE HUMAN DEVELOPMENT MAGAZINE



MARCH 1994

HIV AND AIDS: PREVENTING THE WORST

A new 27-minute video that highlights the development impact of HIV and AIDS in developing countries has just been released by the United Nations Development Programme (UNDP).

Shot in Zambia and India, the video captures the feelings and frustrations of people who are coping with the consequences of HIV infection and AIDS. In Zambia, there are views of the devastation that the loss of workers, too ill to carry on, has caused in agriculture, copper mining and banking. In India, community development workers share the approaches they are taking to halt the growing incidence of infection, which threatens similar grave effects.

While the video is set in developing countries, its message is applicable worldwide: HIV and AIDS are posing an ever growing threat to people, communities and societies. "Preventing the worst" requires action on the part of many to overcome this epidemic.

Suitable for general audiences, the video was produced for UNDP by the London-based Television Trust for the Environment.

To obtain a VHS copy in English (NTSC, PAL, SECAM) send a $25.00 cheque or money order, drawn on a US bank, to:

United Nations Development Programme
Division of Public Affairs
One United Nations Plaza, Room DC1-1922
New York, NY 10017, USA.

Other language versions available soon.

CHOICES

THE HUMAN DEVELOPMENT MAGAZINE

VOL.3, NO. 1

SPECIAL REPORT: ENERGY

Fueling Alternative Energy in the South Sid Kane 4
Wind Power Brightens Mauritania's Future Denise Barricklow 6
Zimbabwe Taps Energy From the Sun Barnabas Thondhlana 8
Exploring Biomass in Brazil Michael Kepp 11

Page 16

VIEWPOINTS

Crisis Prevention Peter Witham 13
Searching for Human Security Mahbub ul Haq 36

FEATURES

Tree Planting in Sine-Saloum Takes Root Ibrahima Cisse and Kristin Helmore 16
Cleaning Up Egypt's Lake Manzala: A Natural Solution Lou Werner 30
The Lost and Found Art of the Jalq'a Ruth Massey 33

Page 30

FOCUS: TRADITIONAL MEDICINE

A New Look at Old Cures Judith Justice 22
Preserving Sri Lanka's Ancient Remedies Tomas Larsson 24
Zimbabwean Healers Help in the Fight Against AIDS 26
Peter Bischoff and Marianne Østergaard
Marketing Madagascar's Medicinal Plants Dana Wickware 28

LASTTAKE

After Earthquake, Schools Reopen in Kyrgyzstan 39

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Director: Søren Dyssegaard *Editors:* Lois Jensen, Sid Kane *Contributing Editors:* Paul Boyd, Mary Lynn Hanley
Editorial Assistant: Françoise Gerber *Art Director:* Maureen Lynch *Design:* Kristin Mooney, Mary Vengrofski
Production: Mila Feliciano, Jennifer Prince *Translations Manager:* Elizabeth Scott Andrews
Administration: Linda Inocencio-Groux, Freweini Abebe, Danielle Strahl *Circulation:* Alison Walton, Deidra Parker
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Cover photo by Jerome Weingart: Raising a windmill in Mauritania.

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Fueling Alternative Energy in the South

The world's unchecked use of fossil fuels for energy, namely the burning of coal, oil and to a lesser extent natural gas, has brought environmental consequences that grow more urgent by the day. Released into the atmosphere each year from fossil fuel burning are nearly six billion tonnes of carbon, in the form of carbon dioxide, which is a principal greenhouse gas implicated in global warming. Today, most people understand the grave environmental risks that can accompany even the slightest increase in global temperature. Other emissions released from the burning of fossil fuels, such as sulfur and nitrogen oxides, have left many cities clouded by hazardous levels of air pollution, with acid rain damaging forests, farmlands and marine ecosystems.

The adverse consequences of fossil fuel burning, and the disastrous predictions associated with them, have become lodged in the world's conscience. And while most of the responsibility lies with the industrial countries, where excessive fossil-fuel consumption has taken place, few realize the role that the developing world could soon play in this dark scenario.

Today, approximately two billion people, most of them living in rural parts of developing countries, have no access to regular electric power. Should these rural dwellers begin to receive electricity from fossil fuels, the impact on the environment could be devastating. Already, since 1970, total energy consumption in developing countries has nearly tripled, and the trend is expected to continue as more countries strive to deliver electricity, along with a better quality of life, to greater numbers of people.

Experts predict that if this population used an average of 100 watts per person each day from fossil fuels – a conservative estimate – greenhouse gas emissions would rise between 10 and 30 per cent. This would dramatically increase the risk of global warming and provoke countless pollution-related health problems for billions of people around the world.

"In upcoming years, increased energy demands will come primarily from the developing world," says Frank Pinto, a technical adviser on energy, minerals and ozone-depleting substances in UNDP's environment and natural resources group. "If part of this demand is not met by savings from energy efficiency, it's going to come from increased energy production. And if the energy is produced from oil and coal, there could be painful consequences for the environment."

In upcoming years, increased energy demands will come primarily from the developing world.

In an effort to provide developing countries with a wider range of options, UNDP is assisting in the development of environmentally friendly energy alternatives, both through its regular programme and the Global Environment Facility (GEF). Between 1990 and 1993, UNDP invested US$49.6 million in new and renewable energy projects through its ongoing programmes of assistance. Solar, wind, geothermal and biomass sources – including energy from sugarcane residues – are among the non-polluting alter-

Illustration: Michael Donato

natives also being explored through the GEF in a dozen countries, including Brazil, Côte d'Ivoire, India, Mauritania, Mauritius, the Philippines and Zimbabwe.

"New and renewable energy sources definitely have a role to play, not only because they are environmentally beneficial, but also because they require less infrastructure development," says Mr. Pinto. "While they may not address all the energy needs of the developing world, they will be very useful for hot water heating and refrigeration in rural and remote areas, and even in some small cities not adequately covered by electric grids."

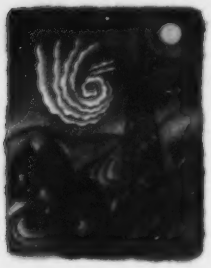
Important technological advances, which have brought down costs, have strengthened the economic viability of alternative energy sources. "In the past, the big obstacles to solar energy use in developing countries were the cost, the availability of credit, technical and marketing infrastructure and sheer awareness," says Derek Lovejoy, a United Nations adviser on renewable energy. "We are now addressing each of these problems."

But there is another obstacle that kept many alternative energy projects from succeeding in the past. The need to adequately train communities in maintaining and repairing energy equipment was often overlooked. "In the past, most solar and wind energy kits were imported and dropped down on the developing world," explains Mr. Pinto. "No one was trained in how to maintain the solar cells or the turbines. And if anything broke, everything stopped until the parts could be brought in, which sometimes took up to three or four months."

A goal now is to encourage community participation in alternative energy projects, to ensure that they are sustainable. Efforts to build up capacity to maintain, repair and even manufacture renewable energy facilities are being carried out by the GEF, which is jointly managed by UNDP, the World Bank and the UN Environment Programme.

The benefits of such projects are not solely environmental. As renewable energy proves reliable and sustainable, it could relieve many developing countries of enormous financial burdens, since the cost of importing fossil fuels can be economically crippling. According to the World Resources Institute in Washington, DC, 29 of the 38 poorest countries currently import more than 70 per cent of their commercial energy, most of it in the form of oil. Clean and cost-effective forms of renewable energy would therefore bring important economic and environmental gains. But beyond these twin goals is the more immediate benefit: the electrification of rural areas, many for the first time, bringing with it an improved and healthier quality of life for people who have lived their lives on the dark side of power lines.

On the following pages we report on three projects now getting under way in Brazil, Mauritania and Zimbabwe that are at the forefront of the renewed effort to promote alternative energy use in the South. **— Sid Kane with reporting by Denise Barricklow**



Wind Power Brightens Mauritania's Future

By Denise Barricklow

It was the kind of project that sceptics insisted would never work. In neighbouring Senegal, about 100 wind-driven water pumps were installed in the 1980s, but are inoperative because of lack of funding and trained people to maintain them. If that wasn't enough, those coordinating the new water project in Mauritania wanted villages with per capita incomes of about US$500 a year, to invest $1,000 to $2,000 for installing similar wind-powered pumps.

But the sceptics couldn't have been more wrong. Today, the pumps installed by "Project Alizés," run by a local NGO, are providing water to thousands of villagers in Trarza, a wind-blown region on the edge of the Sahara in southwestern Mauritania. Indeed, Project Alizés, which has constructed wind-mechanized water pumps in 100 villages, has proved so successful that the government of Mauritania recently approached the Global Environment Facility (GEF) to build on the effort. The goal is to introduce 100 wind-powered electric turbines over the next five years – which would provide communities in Trarza with electricity for the first time.

"When Project Alizés first started in 1990, many people said there was no way it could work, that no one would be willing to invest in it," says Charles McNeill, the GEF coordinator for UNDP's regional bureau for Africa. "But as it turned out, there were many villages that were willing to make the investment. It became clear that the villages with the wind-powered pumps were getting reliable supplies of clean water. Then, suddenly, these incredibly poor communities were coming up with $1,000 down-payments for the new wind turbines. The demand is so great there is a backlog."

The new effort will expand on what Project Alizés has already accomplished. With $2 million in funding, the GEF will set up a revolving credit line that will allow villages to borrow money to purchase the wind-powered electric turbines. The turbines will drive generators that will be used not only to pump water, but to provide electricity to schools, homes and health clinics. Equally important, the project will train villagers in maintaining and operating the systems, which will be manufactured locally.

When Project Alizés first started in 1990, many people said there was no way it could work.

Set to begin in 1994, the project is expected to have a significant impact on desert communities in the Trarza region, which currently are beyond the reach of the country's power supply. Already, in villages that were equipped with pumps through Project Alizés, chronic diarrhoea, which used to affect 40 to 85 per cent of children, has declined to almost zero. The additional water provided by the new wind-powered turbines will enable villages to grow more vegetables because of irrigation, and to raise goats and other animals in the harsh environment of a country that is two-thirds desert.

Electricity will also enable villages to store food and cash-economy goods – including dairy products and fish caught along the coast – in refrigerators or freezers, along with vaccines and other pharmaceuticals.

The fact that electricity will be provided through a decentralized, community-based system is key to its success, says Jean Edeline, UNDP's resident representative in Mauritania. Since most of the villages in Trarza are remote and scarcely populated – an average village has about 100 people – there is little possibility that the region will ever be connected to a main electric grid. "Only a few cities in Maurita

electric grid. "Only a few cities in Mauritania have electricity, and in the rest of the country electricity doesn't exist at all. If successful, wind energy could vastly improve the quality of life in rural areas."

The project could also pave the way for new alternative energy efforts elsewhere in Africa, and in other parts of the developing world. "This initiative establishes a model for widespread replication in the region," says Jerome Weingart, a UNDP consultant who helped design the project. "Wind power was picked for Mauritania because it is one of the windiest countries in Africa, and in such conditions the technology is economically attractive."

Jerome Weingart

Alizés manager Luc Arnaud (right) holds an onion grown with water pumped by a new village windmill.

The initiative is part of a larger effort to explore sustainable alternative energy possibilities for countries which, like Mauritania, are rich in natural resources that can be used to produce electricity – like solar and wind power. Although alternative energy technology has been available for years, many projects never got off the ground because they did not adequately ensure that there was local capacity to install, operate, maintain and repair the systems. This, explains Mr. McNeill, is what plagued the earlier project in Senegal.

"Past failures have occurred because people focused on the technology without developing the local capacity to maintain it," says Mr. McNeill. "Until you have the in-country ability to build these installations, you don't have the possibility of sustainability. That type of project will always be a hand-out."

But community participation proved to be the difference between success and failure in Mauritania. After conducting a feasibility study to determine that wind was the cheapest and most viable alternative energy source in the region, the coordinators of Project Alizés established a strong system of village involvement. "This is what we will build on," says Mr. McNeill, noting that about 90 per cent of the parts used by the project are now being produced in Mauritania.

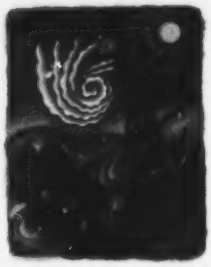
Mr. Edeline explains why Project Alizés worked so well. "The communities invested their own money into the equipment, so they feel a level of responsibility that isn't there if it's simply given to them. Through the project, villagers have gained important management skills and have been sensitized to the need to properly maintain and operate the systems."

Those working on the GEF project insist that they have learned from earlier mistakes. "If a project is done badly, as some alternative energy projects in the past have been, you set development – and the whole process – back. When you have a failure of that kind people lose faith that things can change. This is why it's incumbent on us to do it right," Mr. McNeill says.

The project will also provide training to Mauritania's private sector to ensure that it has the necessary resources to manufacture the parts and to install the wind systems. And while the project's initial target is to power 100 villages in the first four years, the longer-term goal is to help Mauritania acquire the capacity to apply the technology throughout the country, and to develop a private sector that can keep it going.

Mr. Edeline says that the communities in wind-blown Trarza are eager, as is the government, to see the project take shape. "The government is fully behind it, and has contributed a lot to its formulation. The main thing now is to help the rural population understand both the benefits and the responsibilities involved in keeping the turbines going." ■

Denise Barricklow is a freelance journalist based in New York.



Zimbabwe Taps Energy From the Sun

By Barnabas Thondhlana

Harare — On three occasions in the last year, much of Zimbabwe was plunged into darkness due to a failing power supply. The blackouts were directly attributed to the low water level in the Kariba Dam, which was not sufficient to drive the nearby hydro-electric turbines. The amount of water in the dam, the country's major plant for hydro-electric power, had been diminished by Southern Africa's drought.

But for a few people like the Labana family, who live on the outskirts of Harare in the rural village of Domboshawa, the blackouts were of little consequence. While the rest of the country languished in darkness, the Labanas had all the light they needed. That's because last year the Labanas invested US$1,600 for a solar photovoltaic system for their home, and it has yet to fail them. The 45-watt system includes solar panels, a charge controller, battery, fluorescent lights and sockets for the family's radio or television set.

"When we installed the system last year our neighbours thought we were making a mistake, that we shouldn't use our hard-earned money that way," says Ms. Labana. "But now I'm glad that we made the investment, not only for me, but for my three school-going children. Their grades have improved since they're able to spend more time studying."

The Labanas are just one family participating in a small but growing solar revolution in Zimbabwe, a country with ideal sunlight conditions. Plugging into this vast and largely untapped resource, a new solar energy project financed by the Global Environment Facility (GEF) will accelerate the spread of solar energy, while improving the technology and bringing down the cost.

Zimbabwe, a country with 10.5 million people, has 80 per cent of its population living in rural areas. Despite having one of the largest power systems in sub-Saharan Africa, Zimbabwe has been unable to meet the energy demands of the vast majority of its population, which is growing at an estimated rate of two to five per cent annually. The country has large coal reserves, estimated at 30 billion tonnes. Should the government decide to extend its electric grid to satisfy increasing energy needs through conventional sources, it would result in irreparable damage to the environment .

The GEF project, now getting under way with a budget of $7 million, will initially provide some 9,000 homes with solar photovoltaic systems capable of powering lights, radios and televisions. A credit facility has been established to assist homeowners in purchasing the units, and the country's private sector, which will receive equipment and train-

Despite having one of the largest power systems in sub-Saharan Africa, Zimbabwe has been unable to meet the energy demands of the vast majority of its population.

ing, is taking on an important role: it will manufacture, install and maintain the systems – which are being built from parts imported from the United States and Europe. In remote areas, local entrepreneurs will receive training in repair and maintenance.

While helping many here light up their homes for the first time, the initiative will also establish an important model for other countries in the region that need cost-effective ways to increase electricity supply. Gibson Mandishona, the project's manager, cites other important goals. "We want to address the issue of global warming and greenhouse gas emissions by demonstrating the viability of solar energy in Zimbabwe's rural areas," he says. "This will reduce the need to extend the conventional electric grid system, and also lower emissions from gas and kerosene."

Zimbabwe is particularly well-suited for the development of solar energy, and is an ideal host for the demonstration project. Its level of solar radiation is among the highest in the world, comparable to such places as Kuwait and the American Southwest. Yet a relatively small number of people have been able to take advantage of solar power, largely because of prohibitively high costs and the lack of appropriate technology. Through the GEF project, costs for the solar units are being brought down because the parts are being imported on a duty-free basis. The cost of the new systems varies from $500 for a 25-watt unit to $1,000 for a 45-watt unit – considerably less than the $1,600 paid by the Labana family.

Mr. Mandishona stresses that while the units are being made more affordable, the quality of the technology is of the highest calibre. "It is essential for the success of Zimbabwe's solar electric industry, as well as for the project, that all the systems installed are of top quality and will last for many years. Appropriate standards for the systems have been set, and manufacturers will have to follow them."

In the past, Zimbabwe's solar industry has been hampered by a lack of private sector capacity in manufacturing and maintenance, limited financial resources to import the technology and a shortage of supply of the units – which resulted in uncompetitive pricing, unfilled orders and lack of competition. The GEF project is aiming to address each of these problems.

Costa Manzini / UNDP

The solar panel on the roof of the Labanas' home.

As Zimbabweans begin to repay their loans and replenish the credit facility, more monies will be lent out to enable other homeowners to acquire the solar systems. Within five years, as many as 25,000 rural homes could be illuminated.

Mr. Mandishona sees many benefits resulting: "The solar units will promote better learning in rural schools. In addition to being hard on the eyes, kerosene

lamps, firewood and candles, which are now being used, are poor reading sources."

Access to radio and television will bring a flow of new information to people in rural areas. Moreover, says Mr. Mandishona, the availability of light in the home could also help bring the country's birth rate down. "Statistics have shown that the birth rate is high when people are enclosed in the dark for long periods," he says. "Most rural people in Zimbabwe go to bed at around 7:00 p.m., whereas when their homes become solar powered, they will probably retire later."

Another potential spin-off of the project is the establishment of small-scale rural enterprises that could boost local incomes. Already, in Domboshawa, villagers have come together to purchase a solar unit in order to start a community sewing project to manufacture school uniforms. "The community is raring to go," says Ms. Labana. "The sewing project will not only create income for us, but it will result in big savings on the cost of uniforms."

Thelma Awori, the UNDP resident representative in Harare, says the fact that women will benefit from the effort makes it all the better. "Bringing electricity to rural areas through the use of environmentally benign sources is a breakthrough. We expect to see women taking up enterprises like local bakeries, beer brewing, sewing and poultry raising, all being run by solar energy," Ms. Awori says. "A cheap source of energy for these activities will move us a big step forward."

Production of photovoltaic units at Solarcomm in Harare.

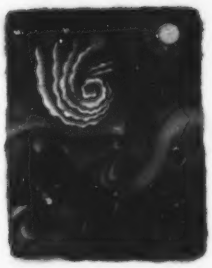
Gibson Mandishona (left) inside the Labanas' solar-powered home.

Photos by Costa Manzini / UNDP

UNDP has sought the involvement of district councils, the Solar Industry Association and NGOs, and the response, Mr. Mandishona says, has been very enthusiastic.

The initiative has also forged a partnership with Zimbabwe's private sector, which plays an important role in the project. "The eyes of the world are focusing on this as a test as to whether solar technology is an appropriate energy source," says Mike Mollatt, chief executive of Solarcomm, Zimbabwe's largest manufacturer of solar photovoltaic panels. "We are obliged to make it a success." ■

Barnabas Thondhlana is an editor for the Financial Gazette *in Harare.*



Exploring Biomass in Brazil

By Michael Kepp

Rio de Janeiro — Dozens of dams, from the southern plains to the Amazon Basin, provide the bulk of Brazil's electrical energy needs. But in certain regions of the country there are few stretches of river left that are suitable for a hydro-electric plant. As early as the 1980s, Brazilians began to ponder what natural resources, aside from rivers, were plentiful enough to keep their cities lit and their factories running into the 21st century.

Solar energy was still considered too expensive, and information on wind energy too rudimentary. The country's geologic conditions ruled out geothermal. Thermal generation using local gas or heavier fossil fuels was constrained by small local reserves. But Brazil, like other tropical countries, does possess one natural and renewable resource that could produce electricity: a climate which affords a long growing season.

Nearly year-round sunshine and rainfall make trees in Brazil grow quickly, especially eucalyptus, with a six-year growth cycle. And tree plantations can be a source of biomass fuel to generate considerable electricity. At least that's what some Brazilian energy experts contend. They argue that efficiently converted biomass is one of the few options for supplying electricity on a large scale in any global, carbon-constrained growth scenario. And its energy is non-polluting and renewable. Furthermore, its feedstock, growing trees, are a carbon "sink," thus reducing a possible "greenhouse" effect. That makes biomass far more environmentally friendly than hydro-electric plants.

This is one reason why the Companhia Hidro Eléctrica do São Francisco (CHESF), the federally-owned utility responsible for bulk electricity supply in the northeast region of Brazil, first got behind biomass. But CHESF also realized that as the region's low-cost hydro resources began to be fully utilized by the turn of the century, and with electrical consumption rising, biomass could help reverse the likelihood of a long-term energy generation deficit.

In 1991 CHESF gathered together other interested parties – Shell Brazil and the CVRD mining company (both of which had tree plantations), CIENTO, a research and development firm with extensive biomass energy experience and Eletrobras, CHESF's parent company. With financing from the Rockefeller Foundation, the group prepared a financing proposal for a wood biomass project which was submitted to the Global Environment Facility (GEF).

The result is a US$7.7 million project now getting under way to conduct equipment development, basic engineering and economic feasibility studies to determine if the idea is really viable. These studies are being conducted by a mix of Swedish, Finnish, Brazilian and US firms and will be completed by March of 1995. If the tests prove favourable, the GEF has promised to put another $23 million into building a $70-million demonstration biomass power plant with hopes that private industry will finance the rest. Construction is estimated to take two years, as would the plant's experimental phase. If all goes according to schedule, Brazil could, by the year 1999, host the world's first commercial, wood biomass integrated gasification/gas turbine (BIG/GT) power plant.

A BIG/GT plant gasifies wood by heating it with just a little oxygen, but not enough to cause the wood to burn completely. The resulting gas powers a turbine which generates electricity. Lab studies, conducted in Sweden, Finland and at Princeton University in the US, show that the BIG/GT technology is twice as efficient as feeding wood into a furnace to drive a steam turbine. What the Brazilian project must show is that a commercial-scale, economically-feasible wood biomass plant can be built.

If feasibility studies look good and the project gets private industry funding, plans are to build the $70-million, 30-megawatt BIG/GT plant in northeastern Bahia state. While it may take time to work out the details of BIG/GT commer-

cial-scale technology, electricity from the Bahia plant should potentially be enough to light up a small city of 57,000 homes. Bahia was chosen by CHESF and other project participants because the state is running out of hydro resources and because it hosts an existing tree plantation to fuel the plant.

Eduardo Carpentieri, CHESF's alternative energy project manager, says that one standard-sized BIG/GT plant could fill one-thousandth of Brazil's electrical energy needs. So, if 100 such plants were built, they would supply one-tenth of Brazil's electrical energy needs.

"In Brazil, the amount of electrical energy which could be generated by BIG/GT plants could be substantial," says Carpentieri. "And if the project takes off in Brazil, it could trigger similar projects in Africa, Asia, Australia and even Europe."

Brazil has the right conditions to make the dream of building dozens of BIG/GT plants here a reality. Besides the climate, the country has degraded land that can be made suitable for plantation development, and regions, like the northeast, where electrical energy supply is dwindling.

Brazil is also a leader in the use of renewable energy resources. It produces 80 per cent of its electricity from hydro-electric sources and has developed the world's largest programme for substituting ethanol (from sugar cane) for gasoline. Around 25 per cent of Brazil's five million vehicles now run on ethanol. The BIG/GT project will also test sugar cane bagasse, an ethanol-production residue. Brazil produces enough bagasse to potentially supply 30 per cent of the country's electrical energy needs.

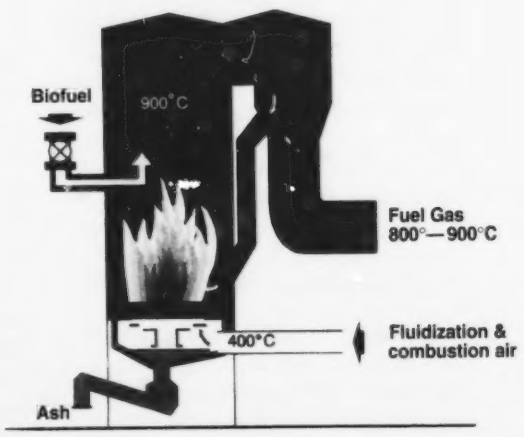
"If the project takes off in Brazil, it could trigger similar projects in Africa, Asia, Australia and even Europe."

One concern which has arisen is that future biomass plants in Brazil might lead to the replacement of native forests by plantations, which will be needed for fuel sources. Nick Remple, UNDP's GEF coordinator for Latin America and the Caribbean, is quick to dispel that fear. "The idea here is to use lands that are already degraded, and not cut into native forests," he emphasizes. "The project is also conducting a long-term environmental impact assessment, and a socio-economic study will help determine the effects on the local populations."

The BIG/GT project stands to gain if a carbon tax continues to be implemented in some European countries, as in Sweden and the Netherlands, and is adopted in other Northern countries. "In the future, companies trying to reduce carbon tax payments will need to invest in projects like BIG/GT whose tree plantations initially absorb carbon," says Bill Beith, the forest products manager of Shell Brazil. "Our hope is, however, that once BIG/GT is perfected, the private sector will invest in it because doing so makes good sense – both from a commercial and an environmental point of view." ■

Michael Kepp reports on environment and business from Rio de Janeiro.

Conversion of Biomass to Fuel Gas



CRISIS PREVENTION

Can better development planning lessen the toll of civil emergencies and natural disasters?

By Peter Witham

Even a cursory scan of the world's headlines is depressing: armed conflicts are grinding on in Somalia, Bosnia, Afghanistan and in a growing number of other countries. United Nations peacekeepers and fieldworkers are becoming the targets of attack rather than random victims. And the effects of natural disasters are becoming more catastrophic each year. International relief aid, in response to such emergencies, has increased substantially. But how large can these sums of money realistically be expected to grow? With no end in sight to the need for relief, the good will of international donors is quickly giving way to disillusionment.

This leads us to a second question,which is, where does development fit in this grim scenario? For the development community to remain aloof from the issue of disasters and emergencies is not only politically short-sighted, it also ignores totally the causes and the effects of such phenomena.

Natural hazards such as hurricanes and earthquakes may be impossible to prevent. But they only become natural disasters if people are vulnerable. Why is it, for example, that a 1988 earthquake in Armenia that registered 6.9 on the Richter scale killed up to 25,000 people, when an earthquake of almost the exact same magnitude in Los Angeles in January 1994 claimed only 57 lives? By reducing poverty we can help increase the coping capacity of vulnerable populations. Therefore helping people lower such vulnerability is as much a development issue as the environment, or women's participation in development. Moreover, the repercussions of natural disasters go far beyond the immediate casualty list that so transfixes the media. Secondary and longer-term effects can be equally if not more devastating. And they must be taken into account by development practitioners.

It has been estimated, for example, that the damage to Mexico City's infrastructure from a massive 1985 earthquake amounted to US$3.6 billion. Yet over the subsequent five years, the negative ripple effect on that country's balance of payments resulted in a loss of $8.6 billion. Furthermore, reconstruction requirements forced Mexican authorities to revise their economic policies to meet an increased demand for public funding, credits and imports. The priorities for public expenditure were redirected to reconstruction projects, leaving many of the pre-disaster problems of the city and its people unattended.

In Bangladesh, floods in 1987 and 1988 killed 2,000 people. But on closer examination we find that the toll was much more extensive than that: in each of these years the country's economic growth rate was halved by the delayed planting of rice and the destruction of seedbeds in the floods, further undermining the country's food security. All of these are considerations that go beyond relief, but they must be taken into account by

development professionals.

Other emergencies may be more complex, but must be subjected to the same analysis. As the situations in Angola, Burundi, Somalia and the former Yugoslavia demonstrate, we know little about the dynamics of emergencies that arise from civil conflict. We do know, however, that their cause usually lies in a lethal mix of poverty, poor governance and ethnic or religious rivalries exacerbated by profound social inequities. We are also learning that their resolution frequently requires the application of peacekeeping and political measures, combined with relief and development. Among the most virulent effects of such complex emergencies is the massive displacement of people; women and children are the principal victims, constituting 70 per cent of the world's refugees.

Chip Hires / Gamma-Liaison

Floods in Bangladesh: Natural hazards become natural disasters when people are vulnerable.

These complex emergencies around the world could easily get worse before they get better. This being said, carefully designed development efforts – carried out as building blocks to national reconciliation in the fragile post-conflict stage – will need to increase commensurately. The appropriateness and the sustainability of these development efforts will be one of the most important factors in determining whether peace itself becomes sustainable. For example, the absence of carefully tailored reintegration strategies for demobilized soldiers and their host communities would be an almost open invitation to resumed violence.

Until now, the standard response of the donor community has been one of generous relief aid. In 1970, 1.5 per cent of Official Development Assistance was devoted to emergency relief efforts. By 1991, this figure had increased to 6.5 per cent. While later figures are not yet available, a substantial rise is certain (if only because of Somalia and the former Yugoslavia). It is not my intention to argue against such relief programmes. The UN High Commissioner for Refugees, UNICEF, the World Food Programme, bilateral donors and the NGO community are performing prodigiously with totally inadequate financial and human resources. Yet we must also be conscious of the impact of such aid and try harder to prevent the need for relief in the first place. An increasing body of evidence suggests, for example, that emergency aid can sometimes be counter-productive in the longer term, increasing the vulnerability of populations and impeding recovery. Ironically, we find ourselves in a situation today where it is far easier to obtain funds for maintaining refugees in their places of asylum than for helping them reintegrate into their own societies. In such cases, we may very well be helping to perpetuate the problem that we sought to relieve, as the presence of large numbers of refugees is sometimes itself a cause of conflict.

So how are we to proceed? And what exactly is the nature of the relief to development continuum that remains logical in the abstract but elusive in reality? The concept of a continuum does not imply a linear and absolutely progressive set of

responses. On the contrary, it means that we are dealing with a set of processes rather than rigidly defined steps. It also means that development must be very much part of the disaster management process, and that the aim of the continuum must be to move from relief to rehabilitation and resumed development at the earliest opportunity. However, this resumed development must include conscious measures to reduce the vulnerability that caused the disaster or the emergency in the first place.

In other words, we must give greater thought to prevention before we reach for the "cure" – for humanitarian, political and financial reasons. (The Japanese insurance industry spends $200 million a year on disaster education alone.) And as development practitioners, we must reconcile ourselves to the vastly more complicated environment in which we have to operate.

We must give greater thought to prevention before we reach for the "cure" – for humanitarian, political and financial reasons.

This means, for example, that we will have to begin examining whether the economic policy "medicine" often prescribed will reduce conflict or enhance it. We will have to ask ourselves if the reconstruction period following a civil conflict or natural disaster is the right time to advocate cuts in social spending, as has happened in certain countries in Africa and Latin America. Similarly, is it really in children's best interests to build a school in a seismic zone without first ensuring its structural stability? And does it really make sense to urge drought-prone countries to increase their reliance on cash crops, as has been done in some instances.

If the international community is to get a grip on the current situation, we must start by examining the linkages between emergencies, disasters and development as a basis for action. A good way to begin is through training that involves both development and relief institutions. The Disaster Management Programme, jointly sponsored by the United Nations Development Programme (UNDP) and the UN's Department for Humanitarian Affairs, is one example. In the last two years over 1,000 people have been trained in 30 countries. In many instances, the programme's week-long workshops brought development practitioners and relief personnel together for the first time. Sixteen of the participating countries have implemented policy and structural changes as a result. In Kenya, for example, responsibility for disaster management, which was formerly relegated to the Ministry of Agriculture, is now firmly placed at the highest political, policy-making and financial levels of government. Still, there is a long way to go.

A story that never made headlines anywhere involves hundreds of the poorest people in Bangladesh, whose homes remained intact during the floods of 1988, when many others were simply washed away. These people were fortunate enough to have obtained credit through the Grameen Bank for construction materials as well as instruction in the building of flood-resistant homes. The Grameen revolving fund had received start-up capital from UNDP. Since that time the effort has been expanded, and more than 10,500 flood-resistant homes have been built in the last two years.

This is just one example of the kind of action we need more of – in fairly predictable and recurring circumstances such as the floods in Bangladesh, as well as in the more complex, man-made emergencies to which we must respond. ■

Peter Witham is deputy director of UNDP's humanitarian programme in New York.

In a region littered with failed reforestation projects, an Africa 2000 initiative in southern Senegal has shown that broadening the involvement of villagers in environmental protection can yield surprising results.

By Ibrahima Cisse and Kristin Helmore

Tree Planting in Sine-Saloum Takes Root

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Sine-Saloum, Senegal —"Of course trees must be planted," says Boubacar Fall. "But they must be planted in the minds of the people as well as on the land." Mr. Fall is the Senegalese national coordinator of the Africa 2000 Network, an initiative of the United Nations Development Programme (UNDP) which supports grassroots environmental projects in 15 African countries. He is discussing the intricate problems that can arise when development planners seek to balance two equally imperative priorities: to restore the environment and to ensure that local people themselves will benefit from and further the work that is carried out.

"Environmental problems demand long-term solutions," Mr. Fall continues, "but such solutions will not be sustainable unless local people are involved. At the same time, environmental problems often require technical solutions, so specialists must be consulted. It's not true that villagers can't understand the technical aspects of a project. They do understand, once the results of the technology have been demonstrated to them."

Demonstrating such results to local villagers is at the heart of a reforestation project in the Sine-Saloum region of southern Senegal. Designed by a Senegalese forestry engineer, the project seeks to restore productivity to infertile, salinated soils in an area some 200 kilometres southeast of Dakar. Steps being taken to accomplish this include the planting of 45,000 trees on 50 hectares of land over a five-year period, which started in 1992; repairing and improving a water-management system; and protecting trees and soil from damage by livestock.

The key to ensuring that these technical strategies will succeed? "Local people must be the owners and the leaders of the project," says Mr. Fall. "Otherwise, no matter how sound the technical elements, the project will fail."

A moonscape of salt

The land is flat, bare and parched around the villages of Loul-Sessene, N'Gessene and N'Dak (total population: 3,282). Chronic drought and the need for fuelwood have forced villagers to strip away the trees. A thousand head of hungry cattle, sheep and goats have finished the job, trampling the grasses, and the soil, into dust. Then there is the salt that has poisoned the land, forming, in some places, a moonscape of white crust where nothing will grow.

The scourge of salinated soils is a problem throughout Africa. According to the Food and Agriculture Organization of the UN, 80 million hectares are affected by salinization. Often this is caused by faulty irrigation systems, where poor drainage allows excessive amounts of water to collect on the soil, and heat-induced evapora-

tion leaves natural salt deposits behind.

But in coastal areas such as Sine-Saloum, tides draw sea water inland through inlets and tidal rivers, depositing salts. When rainfall is low – in this area it has fallen by at least 50 per cent in the last 20 years – the salt deposits are not washed away, but remain in the soil. Sea water also seeps into the groundwater, introducing salt into the soil from below. The heat of the sun draws groundwater to the surface where it evaporates, again, leaving salt behind. The Senegalese technicians who designed the Sine-Saloum project estimate that between 40 and 60 per cent of the arable land in the region cannot be farmed due to salinization.

In 1957, water-management systems were built in Sine-Saloum by the French colonial administration to protect the soil against the influx of sea water and to prevent precious rainwater from flowing out to sea. But local people were not involved in the upkeep of these systems, nor was their purpose even explained to them. "We didn't even know what they were for," says Marcel N'Gor Niakh, a 58-year-old farmer in Loul-Sessene. The French left Senegal in 1960, and over time the channels fell into disrepair, producing the reverse of the desired effect: sea water flowed inland, and what little rain there was drained out to the Atlantic.

For decades, the people of Sine-Saloum have seen their farmlands deteriorate and their harvests dwindle. "Because of increased pressure on shrinking farmland, local farms have become less and less productive, and many people have migrated to the cities," says Pape Amadou Fall, director of information and education for OSDIL, the Senegalese non-governmental organization (NGO) responsible for the desalinization project. "They can't grow enough millet. Rice-farming has fallen off too, and maize production remains undeveloped."

The merits of local solutions

Current development thinking would suggest that the people of Loul-Sessene, N'Gessene and N'Dak should have designed the desalinization project themselves. Indeed, there are examples of home-grown initiatives that are solving environmental problems in many parts of the world. But all too often environmental devastation has taken such a toll that traditional methods of correcting the problem are no longer effective. Changes in the local ecology and climate, as well as sociocultural changes, have created a new development context. While local people must ultimately be the ones to solve local problems, they often need special training to do so.

Mr. Niakh says he has bad memories of the valiant attempts local people made over the years to solve the salinization problem so they could farm their small plots. "We saw only two possibilities," he recalls. "We could either spread large quantities of manure on our fields, or put flocks there to graze and leave droppings behind in the dry season."

Since animal droppings enrich the soil, both of these options have potential, says Ousseynou Diop, a 28-year-old forestry engineer with OSDIL. But the problem with treating salinization through animal husbandry alone is that this approach requires careful management: moving flocks and planting crops such as sorghum or melons at just the right time to take advantage of both the animal droppings and the erratic rains. And while manure can revitalize the soil, animals must be prevented from trampling young vegetation – otherwise increased erosion will result.

"People tried to leave land fallow to revitalize the soil," says Boubacar Fall. "But as soon as there was a bit of grass, the pastoralists arrived with their animals, who ate the grass and trampled the soil. With the perennial drought we're experiencing, grassy areas are increasingly harder to find. Environmental conditions have changed so much that people's traditional skills as pastoralists are no longer applicable."

Applying a technical solution

Siaka Sadio is another Senegalese forestry engineer with a rural background. He grew up in a village in the Casamance region, south of Sine-Saloum. As a researcher with ISRA, the Senegalese Institute for Agricultural Research, Mr. Sadio wrote his doctoral thesis on the problem of salinity in Sine-Saloum. In 1988 he conducted a study on the subject for UNSO, the UNDP-administered United Nations Sudano-Sahelian Office. His conclusion? "That sustainable development in Sine-Saloum can only be achieved through reforestation and livestock management." But when, by 1990, no steps had been taken to translate his findings into action, he decided to establish an NGO that would get the job done.

That NGO is OSDIL, the Senegalese Organization for the Development of Local Initiatives. In 1991, OSDIL obtained a five-year grant of US$250,000 from the Canadian International Development Agency (CIDA) to plant 45,000 trees of selected species, establish a tree nursery in Loul-Sessene and erect chain-link fencing around the 50-hectare reforestation plot. In 1992, OSDIL received an additional three-year grant of $34,250 from the Africa 2000 Network to restore the dysfunctional water-management system and support productive activities in the villages. The idea is that local people will be so convinced when they see the positive effects of planting trees and controlling livestock that they will continue to plant and protect more and more trees – raised in the nursery the project has set up.

Since July of 1992 when villagers planted the first 8,000 trees in a section of the fenced-off area, the results have been dramatic. The 50 hectares chosen for the tree plantation, a desertified valley, contain some of the most damaged, salinated soil in the region. Rainfall was lower than usual in August 1992, and 20 per cent of the seedlings died. Yet within one week of their planting, the absence of trampling hooves had allowed a carpet of grass to sprout under the young trees – something local people had not seen there in years. To prevent competition with the new trees, the grass was cut in a 60-centimetre radius around each tree, and fed to local flocks.

Already the villagers were impressed. Before July was over, 62 women had planted rice in the reforested area, which they were able to water thanks to the rebuilt channels and brand new iron sluicegates of the old water-management

system. By October, the women had harvested 1,430 kilograms of rice. In preceding years, fewer than 10 women had bothered to plant in that valley, and their harvests had been meager. This year, to demonstrate how the soil has continued to improve, OSDIL plans to try out other crops such as millet between the rows of planted trees.

Mr. Diop says that trees help reduce salinity and restore soil fertility because leaves and other material from the trees mulch the soil and encourage grasses to grow. The mulch, the grasses and the shade of the trees reduce the evaporation of moisture from the soil, and this prevents the build-up of salt. Among the trees planted were Australian species such as eucalyptus, meleleuca and casuarina, as well as the local *Acacia syal, Acacia holocerites, Acacia senegal* and *prosopis* – all of which are salt- and drought-tolerant. Their leaves can be cut for fodder, and their branches coppiced for fuelwood without damage to the trees. Some of the trees are suitable for building houses. Others are prized as sources of medicine.

Using part of the grant from the Africa 2000 Network, OSDIL's technicians restored an old 100-metre wide dam near Loul-Sessene and built 12 iron and concrete sluice-gates, designed to keep salt-water out of the farmlands, as well as to create a reservoir to provide water for the tree-nursery. "Now people can store water and use it when they need it in the dry season," says Mamadou Talle, OSDIL's hydraulic engineer. The sluice-gates regulate the water level and empty surplus water onto the rice fields.

"Soil quality is starting to improve," says Mr. Diop. "Grasses are starting to grow, and they're not being over-grazed. The reforestation plot is beginning to look like the lawn of a soccer field. The trees are improving the soil, and in turn the enriched soil is helping the trees to grow."

Now that the local people are witnessing the benefits of tree-planting, OSDIL's plan is for the villagers to continue planting trees spontaneously on their own. The nursery has been set up to supply them with seedlings.

Continued on page 20

Photos by Ruth Massey / UNDP

Top: **Adisa Lansah Yakuba (left), national co-ordinator of the Africa 2000 Network in Ghana, with villagers in Nyamenani.** ***Right:*** **With Network funding, a 90-metre-deep well was dug in the village of Mbousso Ndir in Senegal.**

David Johnson / UNDP

The Africa 2000 Network

The Africa 2000 Network is currently providing financial and technical support to some 400 grassroots projects aimed at restoring environmental soundness in Africa. With contributions from Canada, Denmark, France, Japan and Norway totalling US$17.1 million, the Network is supporting projects in 15 countries: Benin, Burkina Faso, Burundi, Cameroon, Ghana, Kenya, Lesotho, Mali, Mauritania, Rwanda, Senegal, Tanzania, Uganda, Zambia and Zimbabwe.

The Network's mandate is twofold: to restore and preserve the environment while promoting sustainable development. It also seeks to support community leadership by requiring that funded projects be designed, implemented and monitored by the very people

A grant to the Nahone Agricultural School in Zimbabwe is supporting local construction of a water catchment system for irrigation.

they are intended to help. "Africa 2000 seeks to build on what locals have already established," says Kate Moyo Mhlanga, an Africa 2000 coordinator in Zimbabwe." It also seeks to help them achieve goals they have set for themselves." Since relatively small-scale, grassroots projects are the Network's focus, the grants are typically less than $50,000.

Each country where the Network operates has a national coordinator, half of whom are women. The coordinators receive requests for funds, review proposals and make recommendations to a national selection committee. National selection committees normally include government officials, NGO and community representatives, grassroots leaders and United Nations personnel.

Among its activities, the Africa 2000 Network supports tree planting, agro-forestry, increasing agricultural productivity, anti-erosion campaigns, and soil and water conservation.

But according to Tlhabeli Nephtali Peshohane, the national coordinator in Lesotho, "The longlasting effects of the Network are not so much in physical development – the hectares of trees planted, the number of dams built or gardens established. They are in the ability of the people to shape their future by taking appropriate decisions and actions in those things which affect them most." **— K.H.**

Students in Butare, Rwanda are learning ecologically-sound agricultural practices and growing healthier food crops.

Continued from page 18

The roots of failure

The process sounds logical, and early results have been promising – especially in a region littered with the remains of failed reforestation projects.

"In the past, there was no strategy for planting trees," says Boubacar Fall. "Appropriate species, adapted to local conditions and needs, were not chosen, and the trees were not fenced. But most important, the planting was done by outsiders." OSDIL knew that for their project to succeed, the local villagers had to make it their own. So, working together with them, OSDIL identified activities that would benefit local people in the short term, while giving the tree-planting project time to demonstrate the rewards of long-term investment in restoring the environment.

It may seem surprising that people living in a devastated environment would need to be encouraged to take action. Boubacar Fall explains it this way: "Poverty is at the root of the problem. When people need an immediate return on the investment of their time in order to survive, it's difficult for them to accept the need to fight environmental deterioration. If we had said to these villagers, 'We want you to put time and effort into planting trees,' they would have listened politely. Then, as soon as we were gone, they would have said, 'These people are dreaming.'"

Involving the people

To avoid just such a reaction, Pape Amadou Fall says that OSDIL took great pains to win the people's trust during the early phase of the project. "When we first came to these villages, people thought we would offer some kind of remuneration," he says. "We told them 'We want you to plant trees, but we have no money or food to give you. Instead, we want you to tell us about your problems, and then we'll propose ways that we can solve them together.' It was hard at first, but paying people to plant trees is not development." In previous projects, as soon as the handouts ran out, the villagers simply abandoned the tree plantations.

OSDIL knew that for their project to succeed, the local villagers had to make it their own.

In the three villages, OSDIL sought out especially the collaboration of women and young people, who have been organized formally and informally for the last 20 years.

It took about three months of frequent meetings between OSDIL and the various village groups before an inter-village committee, made up of about 160 members, was assembled. At their first meeting – which both Mamadou Talle and Pape Amadou Fall characterized by an atmosphere of trust – responsibilities were assigned regarding the tree nursery and reforestation plot.

Next, the committee sat down with OSDIL to decide on the measures that would serve as an incentive for tree-planting. "We studied the economic activities in the three villages," says Pape Amadou Fall, "especially the ones that had problems, such as the women's vegetable gardens." OSDIL naturally targeted women because they are most directly responsible for feeding their families, and with the high rate of urban migration among men, they make up 80 per cent of the villagers actively involved in the project.

"Their gardens weren't producing properly," says Mr. Fall. "The old water systems were in ruins. There were organizational problems and marketing problems." Moreover, the women were using antiquated tools and farming techniques, and animals roamed freely in the gardens, eating and trampling the crops. OSDIL estimates that the gardens, which were farmed collectively in each village, were producing at 40 to 50 per cent of capacity.

"After many meetings with the women," says Mr. Fall, "we said to them, 'You've told us about the problems with your gardens. Now let's talk about how *you* think the gardens can be improved.' The women said they needed fencing, better access to water, and training in preparing the soil, planting, cultivating, harvesting, processing and marketing. So we agreed to train them." The plan was that women would receive additional income, but, more importantly, that nutritional levels would improve.

"As we trained them in better farming techniques, we also trained them to care for tree-seedlings," says Mr. Fall. And with the training goes consciousness-raising. "When they see the good results in the vegetable gardens, they start believing that the tree-planting will be successful as well."

Marie-Pierre Sarr is a 48-year-old mother of eight and president of the women's inter-village committee. "We are pleased with the results for this first year," she says. "The sale of our produce in the Loul-Sessene garden has brought us 50,000 francs CFA (about US$185). With this money, we bought 30,000 francs CFA ($111) of millet which we resold a few months later for 45,000 francs. This amount, as well as the 20,000 francs left over from the sale of garden produce, has been put in the bank, because we plan to do something important with it."

While Ms. Sarr is proud of her entrepreneurial success, she may be going too fast for Pape Amadou Fall. He expects that for the first two years the benefits of most of the vegetable gardens will consist of improved nutrition for the women's families, and that increased income will come later. "After two years," he says, "when the families really have enough to eat and there is less malnutrition among the children, then they can look for markets for their produce."

An integrated approach

The first priorities for the women's savings will be to buy seeds and tools for next year's gardens, and to serve as an emergency fund for women who need medical care, particularly in childbirth. The nearest hospital is in Kaolack, 30 kilometres from Loul-Sessene.

OSDIL has devised a preventive health programme in collaboration with the nurse who runs the dispensary in Loul-Sessene, holding workshops for the villagers on how to prevent malaria and other common diseases. With government support, they plan to purchase anti-malaria medicines and to launch an anti-malaria campaign.

Indeed, the problem of poor health was one of the major concerns the committee members brought up in their meetings with OSDIL. "Our strategy is to link the issues of health, productivity and the environment in people's minds," says Pape Amadou Fall. "During the rainy season (usually July through September) much of the region is flooded. Mosquitoes are everywhere. Children play in the water and get sick, and many people have malaria. Productive work depends on good health, and health is tied to the state of the environment."

And while trees are expected to improve environmental conditions in the three villages, Pape Amadou Fall sees the tree-nursery as an entry-point for more far-reaching activities for the region's young people. Unlike his colleagues at OSDIL, Mr. Fall (a retired government employee) is not a specialist in trees or in water management. His background is in communication and education.

"Why do we do development in the first place?" he asks urgently. "Because the workforce is leaving the villages! Villages won't be able to sustain themselves any more. We want to address this problem at its source, before the young people leave."

With this in mind, OSDIL has been working with village youth organizations. Traditionally focused on sports and cultural activities, OSDIL wants to introduce economic activities and encourage the groups to evolve into development organizations.

OSDIL is providing the young people with agricultural and forestry training, and has purchased a tractor for their farm projects. It hopes to help these fledgling development associations to acquire land and start their own farm and forestry projects. Mr. Fall notes that a successful tomato-growing enterprise in a nearby village has slowed the flow of urban migration from that community.

"We've invited the students from the high school 15 kilometres from Loul-Sessene to visit our tree-nursery," says Mr. Fall. "They came with lots of questions, so it gave us a chance to teach them about the environment. Many kids now want to come and plant trees in our demonstration plot. We've also given them seedlings to plant near their schools."

In 1994, OSDIL plans to offer an environmental course for teachers from nearby schools. And ultimately, with the cooperation of the Ministry of Education, it hopes to introduce forestry as a course in the local school system.

Steps toward sustainability

The project, so far, is clearly a success. Yet the question inevitably arises: How sustainable will all this be when financial support from Canada and the Network has come to an end, and the technicians from OSDIL are no longer providing training and encouragement to the villagers? OSDIL is basing its expectations of sustainability on the power of knowledge – on people's growing understanding that trees can help restore their devastated environment, and on people's newly acquired technical skills.

By the time the project's funding from the Network runs out in 1994, and that from CIDA in 1995, OSDIL is confident that a significant number of villagers will have learned how to care for tree seedlings, where to plant trees, and which trees should be used to serve various local needs. Purchasing more seedlings will not be necessary, says Mr. Diop, because the trees already planted will be producing seeds, and the villagers will have learned how to collect and care for them and promote their germination. The tree nursery will continue to provide seedlings to villagers, because the rural council, a local institution in charge of land and resource management, will take over its operation on behalf of the village organizations.

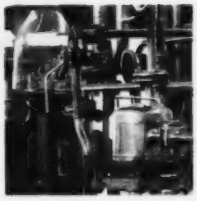
Additional iron fencing – so crucial in protecting young trees, vegetable gardens, grasslands and farms from marauding animals – will not be required either. OSDIL has already introduced villagers to fast-growing, drought resistant "live" fencing made from a local shrub called *Euphorbia ebalfamifera*. With proper trimming and reenforcing, this hedge grows thick enough in one year to keep out the most voracious and destructive animals, goats. It can also serve as an excellent wind-break – an added protection against soil erosion.

And how will people know how to care for the rebuilt channels and sluice-gates of the water-control system? Pape Amadou Fall seems indignant at this question. It should be obvious, his answer implies. These villages have moved light-years beyond the subjugation of the colonial era. Naturally, he explains, the rural council will oversee the functioning of the water system and arrange for repairs. But most important, the people understand the water system now – it is theirs, and they have a stake in its maintenance. "These people are organized," he says, with a ring of triumph in his voice. "They're involved and have been trained! All of this belongs to them!" ■

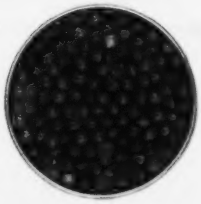
Ibrahima Cisse is a Senegalese journalist based in Dakar. Kristin Helmore, former editor of African Farmer *magazine, is a freelance journalist based in the US.*

Anthropologist Judith Justice writes that increased support to indigenous medical systems could improve the quality and availability of health care in developing countries.

A New Look at Old Cures



BY
JUDITH JUSTICE



Since ancient times, societies around the world have held to their own beliefs and practices concerning the nature of health and illness, as well as to methods for treating and preventing disease. These traditional systems of medicine include those that are highly developed and complex and those that use healing practices that rely on a less formal rationale.

Chinese medicine, for example, has a large body of written literature, specialized medical instruments and a pharmacopoeia of herbs and other substances. In South Asia, Muslim Unani Tibbi and Hindu Ayurvedic medicine have documented traditions with sophisticated diagnostic and curing techniques. Traditional healers in Zimbabwe, on the other hand, diagnose and treat illness through spirit direction, though their knowledge of herbal medicines is often extensive.

Despite this diversity, traditional medicine has been largely disregarded by the Western medical establishment during most of the 20th century. More recently, however, it has gained credence due to popular interest in alternative medicine in the West and the discovery of chemical substances in plants that may hold the key to future treatments for diseases such as cancer and AIDS.

Among international organizations, it was not until the 1970s that the possible value of traditional medicine was explored. In view of scarce resources and limited success with other development models, a new community orientation to health was proposed. The Alma Ata Declaration – put forth by the World Health Organization and other UN bodies in 1978, with the goal of "health for all by the year 2000" – stated that health care should be accessible, affordable and socially relevant. It advocated community-based approaches for providing primary health care using all available resources, including traditional medicine.

As a result, governments began to include aspects of traditional medicine in the design of their national health care programmes. China's model of "barefoot doctors" provided a prototype for various primary health care schemes involving traditional practitioners and birth attendants. Beginning in the 1970s, UN and non-governmental organizations supported such models to strengthen delivery of health services primarily to rural areas. In some cases, the focus was on training traditional practitioners to qualify as community health

workers and thus encourage their integration into primary health care programmes. In other cases, referral systems were created between traditional practitioners, who are widely patronized in rural communities, and Western-trained doctors and paramedical personnel.

While these efforts have met with varying success, they reflect a Western bias and one-way orientation. Traditional birth attendants, for example, are trained in modern medical techniques, with little attention paid to the effectiveness of traditional birthing procedures. This failure to recognize the value and appropriateness of age-old practices ultimately limits efforts to incorporate traditional medicine into national health care plans.

Louise Gubb / UNDP

Efforts have been made to integrate traditional practitioners into the primary health care system in Ethiopia.

Attempts have been made, however, to redress this imbalance. The UNDP-supported programme in Sri Lanka, for example, which is discussed in the following pages, has aimed to improve understanding and communication between these two worlds through committees composed of both modern and traditional practitioners at the community, district and national levels. Such efforts are encouraging, and should be seriously considered by other countries.

The best-known aspect of traditional medicine is undoubtedly the pharmacopoeia of healers – the medicinal plants, mineral and organic substances found locally in many developing countries. Interest in botanical remedies – to treat everything from depression to HIV and AIDS – is growing in the North, partly out of fears of possible side-effects from synthetic drugs. This new awareness has spurred action on the part of both developed and developing countries to protect the quickly disappearing habitats in which these valuable resources are found. Not of least concern to developing countries are the large profits to be had by multinational corporations, which patent and profit from the chemical compounds first identified in local flora. Another unresolved question is the extent to which local people are remunerated for their knowledge and experience of traditional medicines when they are utilized elsewhere.

In Sri Lanka and other countries, UNDP has provided assistance in the cultivation of medicinal plants, many of which were native to an area at one time and are now being reintroduced. In Nepal, Madagascar, Tanzania and Turkey, it has supported research and local production of plant-based pharmaceuticals. Such support has helped reduce the need to import herbal ingredients, and at the same time has increased the supply of medical plants and pharmaceuticals locally and for export.

While international involvement in traditional medicine has been limited, an understanding of its true value and potential contributions is emerging, helping to make investments in it more relevant and more effective. And as interest in holistic health and alternative approaches continues to grow in the North, it may be the South that provides new directions for reaching the goal of health for all. ■

Judith Justice is a professor of medical anthropology at the University of California at San Francisco. She has worked as a UNDP consultant in Sri Lanka, Indonesia and Myanmar.

Photos by David Beatty / UNDP

Preserving Sri Lanka's Ancient Remedies

By Tomas Larsson

Top: Medicinal herbs. Centre: The flower of the osbeckia plant is used to treat hepatitis. Above: A patient receives herbal oil therapy at BMARI. Right: Packaging herbal medicines at the Sri Lanka Ayurvedic Drugs Corporation.

Colombo — One day when he was out walking, M.M.K.B. Yalegama, a retired government employee, suddenly and inexplicably fell flat on his face. "I couldn't get up," he recounts from his hospital bed. "I was totally paralyzed from the neck down." After spending a month in Colombo's General Hospital and seeing little change, Mr. Yalegama sought treatment at a local establishment that practises traditional medicine. Here, following Ayurvedic therapies, Mr. Yalegama received herbal massages, oil baths and acupuncture, and says he is improving. "Our Oriental system is far better than that of the West when it comes to certain diseases," he says.

Mr. Yalegama was treated at Bandaranaike Memorial Ayurvedic Research Institute (BMARI), located in a lush garden of medicinal herbs and trees, some 15 kilometres from Colombo's city centre. To get there one travels on roads clogged with shiny Japanese cars and bullock carts and passes run-down shops selling US brand-name soft drinks: signs that in Sri Lanka the new is quickly replacing the old.

But not all things old are discarded in the rush to modernize. Alongside the expansion of a Western-style health-care system, Sri Lanka, which has the best overall health record in South Asia — and indeed ranks high in this respect among all developing countries — is taking care that its traditional medicine is not lost.

Ayurveda, which derives from the Sanskrit words *Ayus*, or "life," and *Veda*, meaning "knowledge" or "science," is an ancient medical system that originated in India in the 10th century B.C. It combines a study of the physical, mental and emotional aspects of health. For treatment, Ayurveda relies heavily on the use of remedies made from herbs and individualized dietary and exercise regimes.

In a cultural "rebirth" in 1948, following the end of British rule in Ceylon, as Sri Lanka was then called, Ayurvedic col-

leges were placed under government sponsorship and numerous Ayurvedic hospitals were established. In this way, the centuries-old passing down of medical knowledge from master to student – from father to son, in most cases – was institutionalized and given a modern cloak. In 1980, a Ministry of Indigenous Medicine was created.

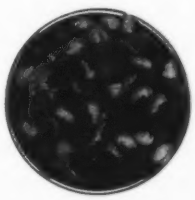
It is estimated that 7,500 Ayurvedic practitioners are active in Sri Lanka today, and that 3,000 are formally licensed. In comparison, there are some 23,000 doctors or paramedics in Sri Lanka that have been trained in the Western tradition. Yet despite the ready availability of modern medicine, Jaliya Medagama, secretary of the Ministry of Indigenous Medicine, estimates that around 80 per cent of the population consults traditional healers. Often Ayurvedic treatment is sought for chronic or geriatric conditions for which no "quick fix" is available, including rheumatoid arthritis, skin diseases, asthma and diabetes.

"I had arthritis for two years," explains a 45-year-old woman, whose feet, knees, hands and elbows are covered in a clay-like, reddish herbal paste. "I had gone for treatment everywhere – including Colombo's most famous private nursing home." Six weeks ago, in frustration, she sought help at the Central Ayurveda Hospital, a teaching institution in Colombo. "Now the pain has gone away," she says, "and I can move my neck again."

"The approach is holistic," says Upali Pilapitiya, director of BMARI, who treats his patients with a combination of therapies involving herbal potions and steam baths, oil massages, acupuncture, music therapy, yoga, meditation and dietary prescriptions. According to Ayurvedic theory, explains Dr. Pilapitiya, disease is the result of an imbalance in the body's three vital forces: *vata* (which corresponds to the nervous system), *pitta* (the metabolic system) and *kapha* (the body's various fluids). "When the three forces are in balance," he says, "a person is healthy."

Like most Ayurvedic physicians, Dr. Pilapitiya is following the vocation of his ancestors. He explains that Ayurvedic treatment is of two types. One aims to support the body systems and promote and safeguard the existing state of health. The second is curative, and seeks to eliminate the causes of pain and disease. To purify the body, a series of purgative processes are used – including blood cupping, sweating and emptying the stomach.

THE CONSUMPTION OF MEDICINAL HERBS IS SO GREAT THAT SOME PLANTS ARE NOW BECOMING SCARCE.



Top: Commercial processing of herbal pharmaceuticals. Bottom: Medicinal herbs.

Herbs play an important role in the treatment, as evidenced by the spicy odours that permeate Ayurvedic establishments. Traditional practitioners still grow or collect the herbs that they use in their remedies. Large-scale commercial production is also under way at more than 80 private enterprises, as well as at the government-owned Sri Lanka Ayurvedic Drugs Corporation. Here, large quantities of 740 different plants are used to make 65 formulas. One metric tonne of garlic, for example, is used each month. The consumption of medicinal herbs is so great that some plants are now becoming scarce.

The United Nations Development Programme (UNDP) has helped the government to tackle this problem by supporting the establishment of three herbal gardens, and by providing training to farmers and schoolchildren in the cultivation and use of medicinal plants. Some of the plants being grown are native to Sri Lanka but are now rare due to overcollection, including *Munrovia pumila*, which is used for high fevers associated with malaria and other afflictions. Other species, which have been introduced, are not found in the wild in Sri Lanka, but are being imported in large quantities from countries such as India, Pakistan and Nepal. These include the plant *Psoralea corlyfolia*, which is a commonly used medication for skin diseases.

While in many respects Ayurveda is firmly rooted in Sri Lankan society, it suffers from a generational bias that does not bode well for its future. It is estimated that nearly three-quarters of traditional Ayurvedic practitioners are over the age of 50. And many who retire are not replaced. Young people tend to have less faith in the efficacy of "old medicine" than their elders, and Bandaranaike Research Institute, for one, is facing serious diffi-

culties in finding new recruits. To change such attitudes requires research, says Commissioner of Ayurveda N.W. Weralupitiya, "so we can prove to the younger generation, and to the world, that Ayurveda has a scientific basis."

For over a decade UNDP, in close collaboration with the World Health Organization, has supported clinical research at BMARI along with the training of its staff. Training has also been provided to traditional Ayurvedic practitioners to integrate

David Beatty / UNDP

Medicinal gardens near Haldummulla.

them into primary health care programmes at the village level, stressing preventive measures such as immunization. "There is no doubt that traditional medicine includes treatments, even cures, for many afflictions, and that most Sri Lankans consult traditional practitioners frequently throughout the course of their lives," says Robert England, UNDP resident representative in Sri Lanka. "For this reason it is important that UNDP and WHO support efforts to document and systematize traditional practices."

Toward this end, UNDP is helping to preserve Ayurvedic wisdom that is at risk of disappearing. Although traditional practitioners tend to keep their knowledge secret, a wealth of information has been compiled over the centuries on thousands of palm-leaf sheaves, describing systems of diagnosis and treatment techniques, along with specific herbal remedies. With UNDP funding, this information has been transcribed and published in seven volumes. Eleven more volumes in the series, entitled "Prescriptions in Ola-Leaf," are being produced, as is a five-volume series on medicinal plants.

In the future, it is hoped that some of this information will be made available in English, providing a sort of road map for scientists seeking new applications of ancient remedies. "Modern medicine could benefit tremendously," says P.B. Weragoda, who manages the UNDP-funded project.

Most certainly, other developing countries in the Asia and Pacific region, which have their own systems of traditional medicine, are eager to learn more about Sri Lankan medicines and techniques. Some exchanges are already under way: Sri Lanka's Ayurvedic practitioners, as a rule, go to India for post-graduate studies in fields not yet available in their homeland. And Dr. Pilapitiya, for one, has travelled to China and South Korea to learn acupuncture. "Acupuncture is described in the ola-leaf manuscripts, but has fallen out of use in Sri Lanka," he explains. At a Buddhist temple in Thailand he also picked up an herbal treatment to help people overcome drug addiction, which he now uses in his practice.

Leading Ayurvedic practitioners in Sri Lanka, including Dr. Pilapitiya, regularly receive foreign patients for treatment. And with the growing interest in alternative health care systems in many Western nations, some have suggested a potential for "health tourism," combining the lure of a tropical island resort with Ayurvedic therapies. Ironically, it may be this surge of interest from the West that gives Ayurveda a new lease on life among Sri Lanka's younger generation. ■

Swedish journalist Tomas Larsson, who is based in Bangkok, is a correspondent for Business Asia.

Zimbabwean Healers help in the Fight Against AIDS

Text and photos by Peter Bischoff and Marianne Østergaard

Tshabalala — George Moyo is a *nanga*, or traditional healer, in Tshabalala Township in Zimbabwe. He sits on the floor cross-legged in a small hut behind his house, naked except for pieces of a fur coat, strings of beads and a variety of amulets. The shelves behind him are lined with cans, jam jars and bottles of all shapes and sizes containing herbal medicines.

He opens a small purse made of palm leaves and mumbling a few words pours

out the contents onto a skin in front of him. There are oblong pieces of carved wood, shells from nuts and mussels, small conches and animal bones. As he begins analyzing the pattern created by his throw, he talks to us about diseases and other problems, about family and love and how all of it is connected to our ancestors' spirits.

Mr. Moyo neither examines us nor questions us about symptoms, but says he receives his knowledge through a special direct contact to the spirits of our forefathers. He makes a diagnosis by "throwing bones," but he also receives advice through dreams or lets the spirits talk through him directly in a state of trance.

Some African governments and medical professionals in Western industrial countries are recognizing the value of traditional healers such as Mr. Moyo, and seeing their potential in fighting modern scourges, including HIV and AIDS.

Susan Whyte, a medical anthropologist at the University of Copenhagen, describes the consultation with a traditional healer as a dialogue in which the healer confronts a patient with his own life and makes him discuss it. "Both healer and patient would say 'the spirits know,'" says Ms. Whyte. "But the healer is very sensitive to what the patient is telling him; actually it is the patient who brings up knowledge about himself."

BECAUSE THEY REINFORCE SOCIAL NORMS, HEALERS ARE OFTEN ELEVATED TO THE POSITION OF INFORMAL LEADERS.

In traditional African culture, ancestral spirits are thought to provide guidance and help to their descendants. But if a code of conduct is violated, it is believed that the ancestors will punish the living by inflicting misfortune or disease. It is for this reason that a healer distinguishes between "normal" diseases, caused, for example, by bacteria or viruses, and "abnormal" diseases caused by angry forefathers or evil spirits. If a case of the latter is to be treated, one has to deal first with the spiritual cause — by correcting the behaviour or neutralizing the evil spirit — before herbal or Western medicine will have any effect.

Because they reinforce social norms, healers are often elevated to the position of informal leaders, sometimes enjoying greater authority than the chief or modern administrations.

In general, African governments have not been active proponents of traditional medicine. One exception is Zimbabwe, where, in 1980, a new black government helped to organize more than 40,000 traditional healers and midwives into an association called ZINATHA.

Gordon Chavunduka, the president of ZINATHA and a trained sociologist and herbalist, says that his government recognizes the power that healers can wield in the community, as well as the value of traditional medicine. "Seventy per cent of the population consults us," he says. "Over the centuries we have elaborated our skills, including knowledge of more than 500 types of medicinal herbs. Furthermore, in facing the problem of high foreign currency costs for expensive Western medicine, traditional formulas offer a good alternative."

One area in which ZINATHA is actively working is the prevention and treatment of HIV and AIDS. The organization is conducting research on the impact of various herbal preparations on both the infection and the disease. While no cure has been discovered, Timothy Stamps, the Zimbabwean minister of health, says they have found treatments that can help alleviate symptoms and prolong patients' lives.

The well-established position of healers within a community also gives them potential as health educators. ZINATHA is conducting seminars to disseminate information on modes of HIV transmission and prevention and basic skills in counselling and home-based care. By the end of 1993, more than 1,600 traditional healers had attended the seminars. A recent grant from the Danish International Development Agency will enable ZINATHA to conduct 70 more seminars, reaching an estimated 3,000 healers.

Left: Herbs and roots used by traditional healers at a local market. Above: Healers in Gokwe, Zimbabwe.

"If our members understand the message of non-risk behaviour, they can promote it in the community," says Dr. Chavunduka. "People listen to them more than they listen to doctors."

It is a view shared by Frants Staugaard, a Danish doctor formerly employed by the World Health Organization (WHO) and a researcher in traditional medicine: "As leaders in a community, traditional healers have the capacity to become 'agents of change.'" Dr.

Gordon Chavunduka, president of ZINATHA.

Staugaard also believes that healers could play a role in promoting quality home care for patients by providing local remedies to relieve symptoms and psychological support to families.

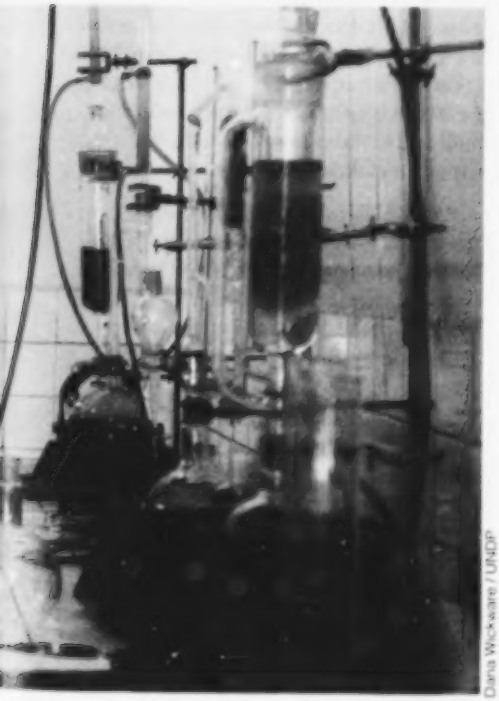
On the recommendation of WHO, Dr. Staugaard is conducting research into the role and practices of traditional healers regarding AIDS, and developing guidelines for possible collaboration. "While my latest visits to Zambia, Uganda and Tanzania confirm that many in the South are ready to explore such possibilities," says Dr. Staugaard, "the attitude of most donors and the Western medical establishment is still one of hesitation." ■

Peter Bischoff is an editor at the Danish Association for International Cooperation. Marianne Østergaard is a freelance journalist based in Copenhagen.

MARKETING MADAGASCAR'S MEDICINAL PLANTS

BY DANA WICKWARE

Antananarivo — Throughout the lush tropical forests and vast wilderness areas of Madagascar are countless native flowers and plants that, for centuries, have been used by traditional healers, who extol their curative powers. One native herb, for example, the rosy periwinkle, has been found to be an effective treatment for childhood leukemia and Hodgkin's disease. But until recently, with the exception of certain folk remedies, there was no local production of



Dana Wickware / UNDP

The Centre for Pharmaceutical Research in Antananarivo.

medicines based on this age-old knowledge. Instead, plants with established or potential medicinal uses have been collected from Madagascar's forests for research purposes or commercial processing in Western industrial countries. Although tropical plants are an important source of raw materials for first-world makers of pharmaceuticals, Madagascar has received little of the high profits associated with such products.

Over the last decade, UNDP has invested more than US$1.6 million to enhance scientific research in the processing and use of medicinal plants in Madagascar by supporting the National Centre for the Application of Pharmaceutical Research (CNARP). Aided by traditional healers, the centre has identified more than 3,000 plant species and categorized them by their therapeutic and other uses. In collaboration with the UN Industrial Development Organization, UNDP has also helped to improve the quality and availability of locally-manufactured medicines, and to develop the export potential of essential oils and oleoresins extracted from plants. While the medicinal properties of botanical oils are well known in many traditional societies, their appeal is growing in markets in Europe and the United States. They are also widely used in perfumes, cosmetics and processed foods. Support to the CNARP is expected to result in a doubling of the country's export sales of these commodities — from $4 million to $8 million over the next decade, according to Madagascar's Ministry of Agriculture.

The project has demonstrated the feasibility of manufacturing 10 pharmaceutical products in Madagascar — using rigorous international standards for quality and consistency of potency and dosages. These include sedatives made from passion flowers and citronella, disinfec-tants from cloves, inhalants for respiratory infections made from eucalyptus and syrups derived from artichokes to aid digestion. At present, one such product is being manufactured by private Malagasy firms; eight others will go into production in the near future. Four more pharmaceuticals are now under development in CNARP's laboratories, located on a quiet campus about 10 kilometres from the country's capital, Antananarivo. Aside from their expected economic benefits, they will provide an affordable and readily available source of pharmaceuticals for the local population.

Modern extraction techniques and quality-control procedures have also been developed for more than 15 essential oils and oleoresins now being produced here, including those derived from ylang ylang, cinnamon, bourbon basil, rosemary, ginger and saffron. Four local producers of essential oils are already applying the new technology, and several new companies have recently sprouted up. With planned, systematic development, Madagascar, along with nearby Mauritius, Reunion and the Comoros, could potentially become major suppliers of the world's essential oil requirements, says Henri A. Dadoun, the project's manager.

The commercial value of these natural products has heightened the interest of both Malagasy manufacturers and foreign buyers. A month-long workshop on the production and marketing of essential oils held in 1993 with UNDP support was attended by representatives from Madagascar and other nearby islands, as well as from Europe.

In order to benefit from the new technologies and marketing expertise being developed at CNARP, local firms enter into partnership agreements with the centre. Through these collaborations — the first between government and private industry in Madagascar — CNARP receives a 10 to 30 per cent interest in the commercial projects that ensue. At present, the centre receives about $12,000 a month in income from these sources, enough to cover the cost of current research and service activities at a time when UNDP assistance is nearing an end. ■

Dana Wickware is a freelance journalist specializing in medical and development issues.

Cleaning Up Egypt's Lake Manzala:

Cairo — Looking across the marshy expanse of Egypt's Lake Manzala, Al Haj Muhammad Abdel Aziz does not like what he sees. As president of the lake's artisanal fishermen's union, Mr. Abdel Aziz knows all too well that what lurks beneath the oily sheen on the lake's surface is even more ominous: fish so poisoned by pollution that 80 per cent have gross abnormalities.

Lake Manzala is Egypt's largest coastal lake, squeezed into the far northeastern tip of the Nile Delta near Port Said and the Suez Canal. Feeding into the lake are a network of industrial and agricultural drainage canals that take their water from the Nile. The heavily polluted wastewater from these canals has turned the lake, once the pride of fishermen, into an environmentalist's nightmare. Making matters worse, water from Lake Manzala flows into and pollutes the Mediterranean Sea.

Many local people have stopped eating fish from the lake's dwindling catch, which once amounted to nearly a third of the national total. Just a few decades ago the lake provided one of the country's richest sources of protein. Mullet and sea bass, eels and shrimp, even ducks and bulbous quail — all were Lake Manzala's bounty, sold by street vendors and immortalized in Pharaonic tomb paintings. Dried and fresh lake fish are still sent to Cairo where the unwary continue to buy, but food vendors there have learned not to tout their place of origin.

In the dusty town of Matariyya, Manzala's primary fishing port, signs of economic decline are everywhere. Its working fleet of sailboats, once one of the world's largest, has shrunk precipitously. No longer do shipbuilders and sailmakers ply their services at quayside. No longer are the sailboats' fanciful paint jobs — masts decorated with candystripes, hulls with starbursts and sterns with serpentine Arabic script — kept fresh.

According to folklore, fish are attracted only to the most beautiful of these sailboats, called in Arabic "reapers of the sea." Now, however, the sleek feluccas, the one-man sumbuks, and Manzala's own hybrid vessel designed specifically for shallow lake fishing, are all in dire need of repair.

But even the most superstitious fishermen know that their dwindling catch has little to do with folklore. Faced with increasingly desperate circumstances and dwindling fish resources, many have been forced to take up illegal practices that harm the lake even more, such as fry trapping, building fish corrals and placing seine nets across canal mouths.

Manzala's ecological ills have been caused not only by pollution, but also by land reclamation projects on the lake's inland shore and by disrupted water circulation patterns stemming from the closure of a key outlet to the sea. Also contributing to the lake's demise was the halt of annual flooding from the Nile when the Aswan

Illustration: Roberta Rosenthal

A Natural Solution

By Lou Werner

High Dam was built in the 1960s. This deprived the lake of the rich sediments that were flushed downstream with the floodwaters and which provided a source of food for the fish.

The Egyptian government convened a Supreme Committee for the Rehabilitation of Lake Manzala in 1991. Since then, such varied national organizations as the Water Hyacinth Institute, the Water Research Centre and the Central Laboratory for Fish Research have pooled their talents to find a way to clean up the lake, which has become something of a national symbol of Egypt's determination to preserve its environment.

"It's important that the lake be saved, both for the local economy and for the nation as a whole," says Inger Andersen, the coordinator for projects funded by the Global Environment Facility (GEF) in UNDP's bureau for Arab States.

The cornerstone of the plan to reverse the lake's condition is an innovative water pollution abatement technology known as "engineered wetlands," soon to be put in place with 50 per cent co-financing from the GEF. The balance is being sought from other donors. UNDP feels strongly about proving the technical suitability of this technology at Lake Manzala, says Ms. Andersen, particularly because it could serve as a model for other countries in the region.

The engineered wetlands will be located at the mouth of the lake's dirtiest inflowing canal, the Bahr El Baqr, or Sea of the Cow. It will be the largest such project, designed for the heaviest and most varied pollution loads, ever constructed anywhere in the world. Still, its $11 million budget brings it in well under the price of a conventional water treatment plant with much smaller capacity.

The Bahr El Baqr drains not only Cairo's municipal sewage but also its industrial wastes. These include dangerously high loads of heavy metals and PCBs from the city's northern factory belt as well as irrigation run-off collected along the canal's 100-kilometre journey across the delta's over-fertilized farmland.

Engineered wetlands function much like a natural water filter, consisting of a settling pond followed by a series of controlled-flow channels that are planted with aquatic vegetation. Each of the plants to be used in the project has different characteristics, growing either under or on the water's surface. As the polluted waters pass through this natural filtering system, the plants absorb and deactivate different pollutants in their roots, stalks or leaves. Water hyacinth, for example, a floating plant, has been used to remove suspended sediments and pollutants from wastewater.

For the Manzala project, which will occupy an area of 280 hectares, the wetland channels will have three distinct sections, which will be planted with bulrush, cattail, chara and water hyacinth, among other plants. Some of these that

An artist's rendering of planned engineered wetlands technology at Lake Manzala: polluted water enters a deep settling pond left, where sediments are deposited. Water then flows through a canal where aquatic plants filter out pollutants. A fish hatchery will be operated at the end of the canal, at the point just before filtered water enters the lake.

are deemed safe will occasionally be harvested, dried and sold as animal feed or used in building materials and for cooking fuel. A fish hatchery will also operate at the outflow gate of the wetlands, at the point just before the filtered water enters the lake.

Although flow capacity through the wetlands will reach one million cubic metres of water per day, this is not sufficient to treat Bahr El Baqr's total volume, and other polluting canals will continue to run unimpeded into the lake. Experts agree that when the project becomes operational in 1995, it will be an important test case for ridding Lake Manzala of its worst pollutants. If successful, it will serve as a basis upon which additional funds could be sought to expand the wetlands technology to treat other sources of pollution running into the lake.

People who once thought that the lake could tolerate a certain pollution level missed the big picture, says project consultant Patricia Lane. "Some people thought that you could dump anything into Manzala because it eventually all poured out into the Mediterranean Sea. But the concept of 'sustainable' pollution falls apart when you start looking at the cumulative effects.

"Small incremental acts cannot be modelled on a computer," she continues. "In Lake Manzala, every time a fisherman builds another fish corral, it changes the water circulation and concentrates more pollutants. So it's impossible to say that the lake can tolerate a certain pollution level."

Indeed, it is close attention to human behaviour on and around the lake which is one of the hallmarks of this project. Egyptian sociologist Mohamed Mohieddin has conducted extensive interviews with local fishermen, learning about everything from artisanal fishing methods to their knowledge of the lake's hydrological patterns. And because these fishermen – along with their traditional economy, health and folk culture – will be the project's first-tier beneficiaries, it is fitting that they become involved and understand the potential benefits and goals.

Mr. Mohieddin has no doubt that this is already happening. "I've met repeatedly with the fishermen's representatives," he says. "I've sailed with them, worked with them and fished with them. They can't wait for the day when their lake is clean again. They have a cultural bond with this life that's stronger than the higher wages and easier working conditions they can find elsewhere."

The benefits of a cleaner lake will not be limited just to lake fishermen or to Egypt's consumers, however. Pollution levels throughout the eastern Mediterranean can be significantly reduced if Egyptian waters, like those coming from Lake Manzala, are sufficiently cleansed at their point of ocean discharge. The UNDP-sponsored Mediterranean Action Plan, an intergovernmental agreement aimed at stopping sea water pollution, would then be one step closer to implementation.

In addition to water pollution control, another goal of the GEF-funded project is to enhance biodiversity in and around the lake. Improved water quality will certainly result in greater diversity of waterfowl and fish species, both migratory and non-migratory, as well as plant life. The project also promises to generate local employment. One marketable new product, cooking fuel made from the dried aquatic plants, is expected to benefit the local economy.

Muhammad Fawzi, director of water and coastal areas protection at the Egyptian Environmental Affairs Agency, oversees the project for the government. "This technology suits our needs perfectly as a developing country," he explains. "It's about one-fiftieth the cost of standard high-tech treatment plants with equal capacity, and can be constructed and operated with very basic skills." Mr. Fawzi also notes that Egypt has thousands of years of experience with dredging and canal work, and that the skills required for this project fit perfectly with those available locally.

Engineered wetlands have been designed for all climates and topographic conditions in both developed and developing countries. They are in use in such places as the Sierra Nevada Mountains and Florida's Everglades in the US, in lowland Mexico and in Thailand. They treat wastes discharged from such sources as mines, paper plants, and shrimp canning and sugarbeet processing plants.

But in Egypt, it is the fishermen's commitment to a demanding and proud way of life that will likely help make the effort a success. Mr. Abdel Aziz reminisces about the lake's recent troubles with a bit of superstition. "With the Open Door Policy (President Sadat's foreign investment plan in the 1970s), we turned our backs on the lake to seek our fortune from Port Said's Free Zone. Ever since then Manzala has failed us, maybe because we failed Manzala."

Project sociologist Mohieddin also senses a collective twinge of guilt on the part of Manzala's fishermen for the lake's sorry condition, along with a determination to help set things right. This then remains the plan's ultimate goal: to restore Lake Manzala's waters to their original clean and bounteous state, so that local fishermen can ply their ancestral trade well into the future. ■

Lou Werner is a freelance writer and producer based in New York.

THE LOST AND FOUND ART OF THE JALQ'A

A NOVEL PROGRAMME IN BOLIVIA HELPS INDIGENOUS COMMUNITIES FIGHT POVERTY WHILE RECOVERING A PART OF THEIR PAST.

TEXT AND PHOTOS BY RUTH MASSEY

Qarawiri — With a baby strapped to her back and wearing the traditional black tunic and white bowler hat of the Jalq'a Indians, Ambrosia Montaña de Llampa sits weaving at her loom in the yard of her adobe home. Her hands stained with dye, she stops to beat the weaving with a llama bone to make the threads taut. Contrasting with the pale colours of the dusty yard and the arid landscape are the deep blue of the Andean sky and the bright red of the fabulous creatures taking shape on the loom: dragons, condors, monkeys, winged cats and surreal animals with rows of serrated teeth, or tails like arrows, all floating against a dark background. The stylized animals in the *axsu*, as these weavings are called, are part of a textile tradition that has been passed from generation to generation of Jalq'a, who live in Chuquisaca, the poorest region of Bolivia, located in the Andes some 250 kilometres south of La Paz.

When Mrs. de Llampa finishes her axsu, it will be taken to an ethnic art shop 30 kilometres away in Sucre, the old colonial capital, where it will be sold for up to US$300. Mrs. de Llampa, who can weave four or five axsus a year, will receive half that amount, thus matching with the sale of one weaving what used to be her family's entire income for a year.

The axsu will be priced by size and quality at the shop, which is located in a renovated colonial convent built around a courtyard. Upstairs is a museum with

a permanent exhibition of weavings and Andean folk art. The enterprise is run by a non-governmental organization called ASUR (Antropólogos del Sur Andino), founded by two Chilean anthropologists, Gabriel Martínez and his wife, Veronica Cereceda.

They first came to Sucre in 1985 to search for the creators of the exceptional weavings they had seen reproduced in magazines and in private collections. Instead, they found that a quiet desperation had settled over the valleys where the 26,000 Jalq'a live. Their artistry with the loom had slowly vanished during decades of poverty.

Veronica Cereceda recalls that time as she watches a llama with three humps take shape on Mrs. de Llampa's loom. "Many of the men were in prison because they could not repay the banks that had given them credit for agriculture," Ms. Cereceda says. "Babies were dying because there was no clean water or health clinics. The drought had dried up potato fields so people were forced to eat their animals. Every family used to have five or six sheep, but there were very few left."

The area was without electricity; the few roads that existed were difficult to traverse and there was no irrigation for the overused soil. Women were leaving to find work as domestics in Sucre and the men migrated for months at a time to find work in coca-leaf plantations in the north.

The axsus worn by the women as an overskirt had become a pale reflection of those of the past. They were smaller, and the traditional motif of exotic animals had been replaced by uninspired geometric designs. The decline in weaving techniques was symbolic of a deeper malaise caused by the problems of a changing regional economy and a long-standing drought that had crippled subsistence farming.

"The weaving tradition started to disappear in the 1960s," explains Ms. Cereceda. "Foreign buyers came and bought the weavings for almost nothing, then sold them abroad for a lot of money. Desperate for cash, people sold family heirlooms such as wedding garments and ritual costumes without realizing their real market value."

Soon, the Jalq'a had little of their weaving heritage left and no models from the past to inspire and guide a new generation of weavers. With the motivation to craft their fabulous designs gone, they wove just to clothe themselves and their families.

A grant from the Inter-American Foundation in 1985 enabled Cereceda and Martínez to take the first steps to revive the weaving tradition among the Jalq'a. The plan was to build a weaving workshop that could produce high quality textiles for sale, with returns going directly to the weavers.

For the plan to succeed, it was essential to find the right Jalq'a community. Over the next few months, the two anthropologists visited numerous villages and spoke with local leaders. In Iru Pampu they found a strong peasant organization that was receptive to their ideas. It was here that the first workshop was built, constructed entirely with community labour. Experienced women weavers were recruited as teachers, a stock of alpaca and sheep wool purchased, and a revolving fund set up to replenish supplies.

Although the Jalq'a women still knew how to weave, they did not remember the *khurus*, the many strange creatures said to have originated in the dreams of their ancestors that had made the Jalq'a weavings unique. Because there were no traditional textiles left in the community, photographs were made of Jalq'a weavings in collections abroad, and photocopies distributed among the women who hung them by their looms.

Like most Andean campesinos, the people of Iru Pampu had no formal education and could barely write their own names. Still, they were determined to manage the workshop themselves. Training courses were organized and soon evening classes were crowded with men and women who, after a long day in the fields, came with a passion to learn. Courses were given in basic adult education, in record-keeping and accounting, and in running small businesses. Participants learned how to mix ingredients for the dyer's shop and how to operate threadmills and generators, as well as to repair and maintain them.

One of the first people to visit the remote village of Iru Pampa was Timothy Painter, the former resident representative of the United Nations Development Programme (UNDP) in Bolivia. UNDP had funds for a textile project in Bolivia that

A QUIET DESPERATION HAD SETTLED OVER THE VALLEYS WHERE THE 26,000 JALQ'A LIVE. THEIR ARTISTRY WITH THE LOOM HAD SLOWLY VANISHED DURING DECADES OF POVERTY.

had not been spent, and Mr. Painter saw the possibilities of reproducing what was taking place in Iru Pampa in other communities in the Chuquisaca region. The result was a UNDP contribution of $566,000 that enabled ASUR to open workshops in five additional communities. The expansion benefited hundreds of weavers and their families, whose incomes rose from $70 to $480 a year – enough to substantially improve their living conditions.

Encouraged by the positive experience of the Jalq'a project, ASUR launched a similar crafts programme among the Tarabuco in 1991, with help from UNDP. The Tarabuco are an ethnic group that live in the mountains south of Sucre. With their conquistador-style felt helmets and multi-coloured handwoven ponchos, they still retained some of their weaving tradition. But the quality of their weavings had also declined.

Like their Jalq'a neighbours, the Tarabuco were suffering from increasing economic hardships brought on by deteriorating soils, drought and a worsening regional economy. The goal here was to assist the Tarabuco in recapturing the fine quality of weaving for which they had been known, while improving their incomes through better marketing.

The project, which is reaching more than 300 Tarabuco weavers in seven communities in Chuquisaca, uses the same strategy that had proven so successful with the Jalq'a: workshops, training programmes in self-management and commercialization through the Sucre shop.

Sixto Condori is proud of being an elected leader of Candelaria, one of the first Tarabuco communities to be included in the project. His new black plastic briefcase is a sign of his standing in the community, and it rarely leaves his side. It was with him on a recent morning in the newly-built community workshop. "We used to sleep on straw mats on dirt floors," Mr. Condori says. "Now we have mattresses and our houses have been improved with cement floors, doors and framed glass windows. We are also able to buy more food. And if someone gets sick, we have money to buy medicines."

In Sucre, the Tarabuco weavings now sell as quickly as those of the Jalq'a, with combined sales averaging $3,000 a month. The shop and museum have become a major tourist attraction. And ASUR has been inundated with invitations from museums and international organizations in La Paz, Europe and the United States, all wanting to exhibit the work.

A permanent exhibit of Jalq'a and Tarabuco weavings hangs in the lobby of the UNDP building in La Paz. "By recovering an artistic heritage that was on the brink of being lost," says current UNDP resident representative Walter Franco, "dignity and self-esteem have been re-established. It was not possible to return the overworked soil to productivity. Instead, the project has given the Jalq'a and Tarabuco the capacity to earn a decent income through their own creativity."

In 1991, the two anthropologists visited Washington, DC, with five members of the Jalq'a community – three men and two women. The Smithsonian Institute had invited them to display their weavings at an exhibition organized in honour of the International Year of the World's Indigenous People.

"We were up on the 30th floor of the Mariott Hotel, and they couldn't get over the elevators," Mr. Martinez recalls. "They were also absolutely stunned by the subway. They spent hours looking at the dinosaurs at the Museum of Natural History, but it was the Space Museum that fascinated them most."

The Washington visit has become part of Jalq'a mythology, and now an occasional space capsule floats among the exotic animals on the loom, and from time to time a dinosaur will appear next to a bird with the head of a cat. ■

Ruth Massey is a photojournalist and former information officer with UNDP in New York.

SEARCHING FOR HUMAN SECURITY

Following are remarks made by Mahbub ul Haq in Bonn at a parliamentarians meeting on global human security.

A new concept of security is beginning to emerge from the receding shadows of the cold war. We are beginning to accept that real security is not just security of land, it is security of people. It is not just security through arms, it is security through development. It is not just security of nations, it is security of individuals in their homes and in their jobs. It is not just defence against conflicts between nations, it is defence against conflicts between people.

Human security, in the final analysis, is the child that did not die; the disease that did not spread; the ethnic violence that did not erupt; the famine that did not happen; the dissident who was not silenced. Human security is not about weapons, it is about human survival and human dignity.

The threats against human security are relevant to people everywhere: in the poor nations because of poverty and disease, in the rich nations because of drugs, crime and violence. The threats may be different but they are real, and growing, and they travel across national borders.

These threats to human security require not the acquisition of more powerful weapons, but a new model of development. This new model of development must accept economic growth as an imperative. But it must translate this growth into improvements in people's lives and in the regeneration of our natural environment.

It is within this framework of human security that we must design new patterns of development cooperation.

But first, let me say where development in the past has gone wrong.

Foreign aid in its present form has done little to create a global social safety net. The rich nations today allocate more than 15 per cent of their GNP, on average, to their own domestic social security systems – in the form of national health care, unemployment benefits and social security payments. This system benefits primarily 100 million people below an official poverty line of around US$5,000 per year. Yet rich countries allocate only 0.3 per cent of their respective GNPs for the fight against global poverty – for 1.2 billion people with an income level below $300. I know that there are public outcries in many developed countries, demanding to know why their governments are spending so much money abroad. But I think we can say in complete professional honesty that if all aid were stopped today, it would mean only that domestic social safety nets would increase from 15 per cent of GNP to 15.3 per cent. The 0.3 per cent contribution abroad is so small that eliminating it would mean little at home – while costing the goodwill of 80 per cent of humanity.

Second, existing aid funds are badly spent, and continue to carry the scars of the cold war. They are linked to no definable global objectives, either of poverty alleviation or of human development. Look at the evidence:

- Developing countries which are high military spenders today receive twice as much foreign aid per capita than more moderate military spenders.
- Only one-quarter of Official Development Assistance (ODA) is earmarked for three-quarters of the world's poor. Egypt receives $370 per poor person per year, India receives only $4. El Salvador get more total aid than Bangladesh, even though Bangladesh has 24 times the population and is five times poorer.
- Less than seven per cent of bilateral aid is given for human priority concerns of basic education, primary health care, rural water supply, nutrition programmes and family planning services.
- Over 95 per cent of all technical assistance – now valued at more than $12 billion a year – is still spent on foreign consultants in the name of national capacity-building.

Obviously there is potential for restructuring aid priorities and for increasing the efficiency and the effectiveness of international cooperation.

Third, the focus of development cooperation has become too narrow. It is associated too much with charity, while excluding issues such as trade, foreign investment, technology and labour flows. The 1992 *Human Development Report* documented that developing countries are being denied $500 billion a year in global market opportunities, compared to the $50 billion in aid. For poor people and poor nations, what matters most is access to market opportunities.

In this light, I would like to propose a five-point agenda for a new development framework.

Illustration: David Suter

First, I believe we need a new motivation for development cooperation, based on fighting the growing threat of global poverty rather than the receding threat of the cold war. The chances of a nuclear holocaust were always slim. But the chances today of drugs, pollution, terrorism or AIDS affecting every family in the rich nations are more real than the chances of a nuclear war. Shouldn't it be possible for parliamentarians today to make their constituencies aware that their lifestyles will be threatened by the spread of global poverty? And that ultimately investment in the developing world is an investment in their own survival?

And in creating a new motivation for aid, wouldn't it be possible to allocate at least two per cent of existing ODA budgets for cultivating new constituencies for change? That works out to about $1 billion a year – half of it to be spent bilaterally, and half through international channels. We live in an age of communications, where powerful vested interests exploit the resources of the media for their own ends. Why should we hesitate to use the same channels to promote a new framework for development cooperation to safeguard global human security?

Second, the nations of the world must be persuaded that the cold war must be phased out of the Third World. We have phased the cold war out of East-West relations, but it still persists in the Third World. Isn't it time that developing country leaders are asked why they spend two to three times as much on arms as on education and health for their people, and why it is that they have eight times more soldiers than doctors?

And isn't it time that we ask the leaders of the rich nations to stop the arms sales of over $35 billion a year to countries which cannot even feed themselves? And to eliminate subsidies to arms exporters, and retrain them for civilian industries?

Third, instead of asking for more aid, existing aid priorites ought to be restructured. I call it a "20/20" vision. Developing countries today spend ten per cent of their budgets on human priority concerns. They ought to be persuaded to spend 20 per cent – by reducing military spending, by privatizing inefficient public enterprises and by eliminating low-priority development expenditures. Developed countries today spend seven per cent of their bilateral aid budgets on human priority concerns. They should be persuaded to spend 20 per cent. If we can manage to do this, it will yield $30 billion to $40 billion in additional allocations for human priority concerns. And the payoffs would be tremendous: in the next 10 years, all children could be in school, primary health care and clean drinking water could be universally available, family planning services could be provided for all willing couples, and severe child malnutrition could be eliminated. All of this can be accomplished by reallocating priorities of existing resources.

Fourth, the growing imbalance between short-term emergency assistance and long-term development support must be redressed. While the UN spent less than $4 billion on peacekeeping missions during the first 48 years of its existence, it will spend more than $4 billion on such missions in 1993 alone. This disturbing imbalance must be changed, because if there is less development aid, there will likely to be more emergencies in the future. And what is happening in places like Somalia? We are spending $10 on soldiers in order to deliver every $1 of food assistance. These are societies crying out for social-economic reforms – not for soldiers in uniforms. At the same time, developed country governments should be persuaded that peacekeeping budgets should come out of their defence budgets, not ODA. After all, peacekeeping is an extension of security concerns. And second, the developmental role of the United Nations, its socio-economic role, must be strengthened by giving the UN a mandate for sustainable human development and more assured financing. The UN must also have a forum for global economic decisions at the highest levels – in the form of an Economic Security Council.

Fifth, perhaps the most difficult and controversial, is the need for a more innovative model of development cooperation, one which moves away from the outmoded notion of charity. What is required is a new mechanism by which payments for services rendered can be made from one country to another: services, for example, to maintain the environment, to control narcotic drugs trafficking or contagious diseases. We must create a mechanism that will allow compensation to be given for economic damages inflicted by one country on another: damage which occurs when trade is restricted or migration is restricted, for example. A mechanism must also be created by which funds could be automatically mobilized for global objec-

tives which embrace human survival. This would apply particularly to areas like the environment, where the huge sums needed may have to be raised, for example, through an international tax on carbon emissions or other such measures.

I realize that these are controversial proposals – that they will not be easy to sell. But I would urge an honest dialogue. The world today needs new concepts of human security. It is searching for new models of sustainable human development and new sources of leadership. Shouldn't it be possible for the countries of the world to build up a nucleus for that leadership by setting up parliamentary committees for human development? These committees could engage the energies of all prominent opinion-makers and agents of change. They could address the sources of human distress at home just as much as the needs of global human security. And they could start a whole new movement for change in our thinking and in our institutions. ■

Mahbub ul Haq is special adviser to the UNDP administrator and chief architect of the Human Development Report.

New World Disorder

In the wake of the cold war, the most insidious threats are those that wreak social havoc. Threats not against nations but against people, in the form of persistent poverty, joblessness, violence and crime, and ecological distress. This was the consensus of parliamentarians from Canada, Japan and 16 European countries who met last September in Bonn, at a conference organized by the Society for International Development and hosted by the German Bundestag. Their purpose: to seek a new political framework for global survival.

"We have moved from the cold war threat of a nuclear bomb, which has greatly diminished, to the threat of a social bomb, which simply grows and grows," said Juan Somavia, president of the United Nations Economic and Social Council, one of more than a dozen speakers who addressed the gathering.

"It is a myth that prosperity will automatically bring peace," added Norwegian parliamentarian Anders Sjaastad. "Europe is less secure than it has been at any time since 1945."

In the vacuum left by the collapse of superpower confrontation, what is the new organizing principle that will shape a post cold-war world? It must be human security, participants agreed, combined with a new global ethic that places greater value on the betterment of people's lives. Closely aligned with this is the need for new North-South partnerships, based on a sharing of global responsibilities.

But trends show an alarming pull in the opposite direction. With few exceptions, foreign aid budgets almost everywhere are being cut as the world's richest nations turn to confront economic and social problems at home. Doors around the world are closing to refugees and asylum seekers, the poorest countries remain locked in the debt trap, and despite recent breakthroughs on trade, protectionism in the North still inhibits growth in the developing world. Even funds for the environment, promised at the Earth Summit a year and a half ago, have been slow to materialize.

To many at the conference the choice was clear. "Either we seize the opportunities before us," said one German parliamentarian, "or we retreat into a fortress to protect our wealth." It was the hope of conference organizers that parliamentarians – as lawmakers and people's representatives – would become the vanguard of a new movement to take positive action. This movement, said Kennedy Graham, secretary-general of Parliamentarians for Global Action, must be based on a "political philosophy called planetary interest, which is seen as compatible with and not competitive against national interests."

The Bonn conference, which received support from UNDP, was the culmination of a series of National Days of Reflection held in the parliaments of 13 European countries. It concluded with the adoption of the Bonn Declaration, which lays the groundwork for subsequent action on the part of both developed and developing countries and the UN system.

According to Roberto Savio, director-general of Inter Press Service and one of the main conference organizers, a parliamentarians conference similar to the Bonn event will be held again in Europe in 1994. Other regional conferences will take place in North America, Africa, Asia and Latin America. A concluding meeting, a Summit of Civil Society, is scheduled for May 1995, just on the heels of the World Summit for Social Development. – **Lois Jensen**

After Earthquake, Schools Reopen in Kyrgyzstan

In May and August of 1992, two powerful earthquakes struck a remote and mountainous part of Kyrgyzstan, destroying 11,000 homes and damaging more than 18,000 others. Along with the destruction of schools and hospitals, bridges, roads and communications facilities were knocked out, making relief efforts in this hard-to-reach area all the more difficult. Hardest hit was Toktogul County, located in the sparsely populated region of Jalalabad.

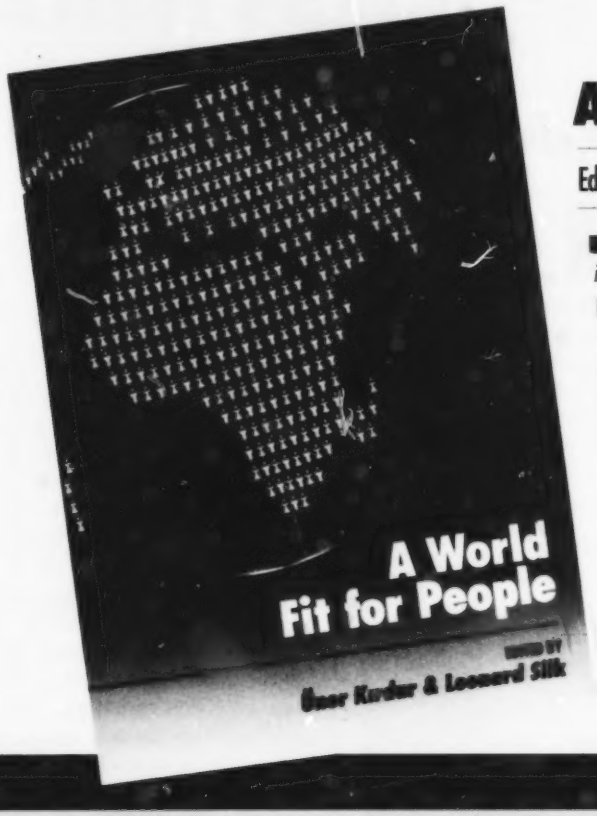
Kyrgyz schoolchildren.

Photo: Rolf Nicolay Aspestrand

Aside from the initial shock, the damage caused by the earthquakes had serious after-effects. For one thing, Toktogul lost four schools, which meant that more than 1,000 Kyrgyz children had no place to learn. School tents were set up, but the winter that followed was brutally cold, with temperatures dropping as low as -25 degrees centigrade. When children began falling sick because of the miserable conditions, three of the tent schools were closed, and the children sent home.

After surveying the damage, Ercan Murat, the UNDP resident representative in Kyrgyzstan, sought donors who would work with UNDP in constructing two new schools in the village of Akdjar— schools that would be more earthquake resistant and ready by the start of the 1993-1994 school year. Mr. Murat found willing partners in the Norwegian Agency for International Development and the Danish International Development Agency, which contributed US$560,000 and $107,000, respectively. UNDP donated $417,000.

With assistance from local workers, teachers and children, construction got under way last summer. In a matter of 82 days, the two schools, fully equipped with textbook and other supplies, opened their doors to eager pupils and teachers — just in time for the new school year. ■



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